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THE MARINE REVIEW

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Able Men Needed on Ship Board

High Grade Executives of Broad Experience Are Essential to Give Vitality to New Shipping Board

FIRST class tools when used by poor mechanics are likely to prove more damaging than inferior implements. The article being formed and finished can easily be robbed of all value for its original purpose, even though the raw material was of the highest grade.

All of which is worth remembering when considering what is likely to happen to American shipping as a result of the enactment by congress of the "merchant marine act of 1920." In the judgment of the majority of business men associated with the multisided marine industry, this new law is an excellent tool, well ground and correctly tempered. The mechanics who will form the finished product—a strong merchant marine—from the raw material, are the members of the shipping board, and they can make or break the healthy young merchant marine as their ability permits or dictates.

May Block Board Appointments

Extended jockeying for advantage is predicted in the appointment of the seven new members of the shipping board. The new law increases the membership from five, raises the salary to a more attractive and commensurate figure, and calls for a new membership, two each from the east and west coasts, one each from the gulf and Great Lakes, and one from the interior. Board members chosen by the President require consent of the senate which normally will not meet until December, three months before the inauguration of the new President. With opposite political parties controlling the administration and the senate during that three months, refusal to confirm the appointees is expected, particularly if a national Republican victory is won at the polls in November. Such delay, of course, permits the incoming Executive to make appointments of men whom he expects to interpret the shipping law according to his views.

President Wilson undoubtedly will name the seven new members of the board within a short time, and such members, with or without senatorial approval, will function until March of next year. In this way, the new shipping act will be executed for eight months by the men chosen at this time. The record of board member appointments made by the present administration is hardly one to inspire confidence in the ability of the new board to successfully handle its tremendous responsibilities. The board, from the time it was first organized more than three years ago, has been in a continuous state of flux. About the only assurance the general public had of the future action of a new board member was that he would not remain in that office for more than a few months at most. Members came and went with the rapidity of a cinematographic shutter. At the present time, the old board has just two members, one of whom bears the honorable distinction of being the only original appointee who has weathered the storms of presidential disfavor as well as resisting the impulse to higher political office. The other member has held the post for about three months.

Congress Delegates Liberal Powers

Board members in the future will be unable to raise the familiar cry of legislative restrictions as the reason for lack of success. Congress in this instance delegated powers so liberally that the new shipping board will stand alone among federal bodies as clothed with legislative powers and freed in some respects from financial accounting.

One example will show the ability of the new board to control America's marine fortunes. Extension of the coastwise laws to insular possessions was made contingent upon the provision of adequate ship service. American shipping will be immensely benefited as soon as the actions of the board permit the Philippine and Hawaiian islands to be included in the country's coastwise trade.

Fortunate as the American people are in having this new legislation passed in the closing days of a session given over largely to political maneuvers, the prize is not quite won. Upon the wisdom shown in appointing the new members rests in large measure the success of America's efforts to regain her old rank.

World Charter Market Reviewed by

TIE UP SHIPS

Labor Disturbances Hamper Vessels and Cause Freight Congestion at Ports—Many Boats Are Shifted

CONGESTION of goods due to labor troubles throughout the world has considerably delayed the natural readjustment in the maritime freight field. Recovery of rail traffic conditions in this country had no sooner become apparent than further trouble developed with longshoremen on the Atlantic coast and with the freight handlers and truckers. The port of New York is still in the throes of a disastrous tieup, causing the diversion of freight through other ports. Later the trouble with the longshoremen spread to Philadelphia. Vessels have, as a result, been tied up in the Delaware river as well as the port of New York. Abroad, the French have been having trouble, labor there definitely delaying the great French liners for some time. The Holland-American boats have just broken a strike but the French passenger vessels were forced to meet the increased demand of their seamen. A somewhat similar situation is developing in the Scandinavian ports, and from Copenhagen comes the report that an effort is being made to recruit farmers to man the Danish ships.

Labor troubles have not been confined entirely to New York and other large ports. Late last month, the Porto Rico line was compelled to suspend sailings temporarily on account of labor troubles at Porto Rican harbors. The Mallory line also stopped operations at Galveston due to the longshoremen's strike. Summer travel has prompted the Eastern Steamship lines to resume its service between Boston and St. John.

Ship Efficiency Is Low

Such delays to shipping, it is feared by steamship men, is confusing the public as to the tonnage situation. On March 31 last, the British merchant marine totaled 20,500,000 tons, an amount approximately equal to the prewar tonnage. The British yards will add approximately 1,000,000 tons to this fleet by the end of the current year. The American merchant marine is approximately 13,000,000 tons. If this vast fleet could be adequately and efficiently used there would be a sharp curtailment in the shortage of shipping space, but labor has not permitted the full use of the world's marine. It is chiefly on this account that freight rates have not declined more rapidly, since every tieup of shipping must be compensated for in some manner or the steamship companies would become insolvent.

The men aboard ship are gradually showing a better appraisal of economic conditions, as attested to by the settlement made between seamen and American operators. For the next year no change will take place in the wage scale on American ships, but certain adjustments have been made in working rules, one of which provides for increased subsistence allowance to the men when not feeding on board in port. An allowance of 75 cents per meal and 75 cents per night for a room, as against 50 cents in each case previously, will be made. Marine cooks and stewards will have an 8-hour day in all ports as well as the home port, but a 10-hour day when at sea, without overtime pay. British shipowners have been compelled to merge the war bonus of £3 a month with the monthly wage of English seamen. This makes the wage of a British able seaman $70.44 a month as against the American wage of $85.

While this decreases the differential between the American and the foreign wage scales, the British shipowner, it is said, is to be subjected to an increase from 40 to 60 per cent in excess profits tax. British ship lines are opposing this move on the part of their government. On the other hand, the new Jones act relieves American steamship owners of all excess profits taxes provided such funds, matched by double the sum, are reinvested in new American ships. The trend during the past month has been to place American shipping on a closer parity with foreign shipping, but at the same time all ocean shipping has been subjected to undue hardships, which can be compensated for only by the continuation for some time longer of high freight rates.

Take Over Passenger Vessels

A radical and sudden change was made recently in the allocation of a number of the ex-enemy passenger vessels. Although the Munson line was allowed certain of the reconditioned ships with which to start the South American service, it is now announced that a new corporation will take over some of these. The Munson line, of course, will be allocated several of the new passenger vessels being constructed by the government, and these will replace the older vessels which started the service. The United States Mail Steamship Co., with the France & Canada Steamship Corp. as unconditional guarantor, has been organized and it has signed a charter contract with the shipping board for the GEORGE WASHINGTON, POCAHONTAS, MOUNT VERNON, CALLAO, SUSQUEHANNA, PRESIDENT GRANT, AMERICA, PRINCESS MATOIKA, AGAMEMNON, ANTIGONE, AMPHION, FREEDOM, and MADAWASKA. The chartering company pays the shipping board

Harriman Expands

AS A RESULT of an agreement made between W. A. Harriman & Co., Inc., and the Hamburg-American Steamship Co., American merchant vessels flying the American flag will soon be operating in the old trade routes of the German shipping concern. According to a recently issued statement, it is explained that the new arrangement is between Harriman & Co., Chandler & Co. and the American Ship & Commerce Corp. of which W. A. Harriman recently was elected president to succeed Gen. George W. Goethals, resigned. Harriman & Co. draw attention to the fact that all the ships fly the American flag and that no German interests are involved.

$3.50 per net registered ton per month and reconditions the vessels at its own expense. The charters are for five years, after which time the company will have prior option to purchase the ships. The company will operate in routes between New York and Queenstown, Cherbourg and Bremen, returning via Cherbourg and Southampton; New York, Dover, Boulogne and Danzig; Boston, Queenstown, Cherbourg and Bremen, returning via Southampton and Cherbourg. The company will also have the right to run services to Mediterranean ports. The POWHATAN, it is understood, will be operated between New York and Danzig by the Baltic Steamship Co. Recent reports indicate that the Kerr line will obtain some of the ex-enemy ships also, but confirmation of this is still lacking. This line has since merged with the Harriman interests.

The Submarine Boat Corp. has organized two subsidiaries: the Transmarine Corp. and the Atlantic Port Railway Corp. The plan is to make use of Newark as a shipping base and utilize some of the fabricated ships built at the Newark yard, running to Cuba. The new line is reputed to have been negotiating with some foreign interests for contracts to carry sugar from Cuba to European ports. The ITALIA has been assigned for the first run from Newark to Havana.

Establish Freight Lines

Megee, Steer & Co., Philadelphia, have announced the incorporation in Baltimore of the Maryland Steamship Co., which will operate between Philadelphia and European ports. The company expects to obtain 10 freighters similar to those built at Hog Island. The American Steamship Co. has been organized to establish a service from Baltimore to European ports. The Acme Operating Corp. has announced a regular freight service between Baltimore and Cuba. The Neptune Shipping Corp. has been organized in New York, but its plans have not as yet been divulged. The North Atlantic & Western Steamship Co. has inaugurated a service from Philadelphia to the Pacific coast. This company will operate between Boston, Philadelphia and Los Angeles, San Francisco, Portland and Seattle. The Pacific line, having converted the ESSEQUIBO to an oil-burner, will send this vessel in service between New York and the west coast of South America.

Ending Ship Program

UP TO June 5, 1920, the shipping board on a program calling for 1300 contract steel vessels had laid keels for 1278 aggregating 8,597,245 deadweight tons. Of this number, 1172 vessels of 7,649,245 deadweight tons have been launched while 1073 of the vessels launched have been completed and delivered. The tonnage delivered is 6,842,187 deadweight tons. The program called for 384 requisitioned steel vessels with a deadweight tonnage of 2,687,266, keels for all of which have been laid. Of this number, 374 of 2,585,966 deadweight tons have been launched and 372 of these with a deadweight tonnage of 2,572,666 have been delivered. May steel ship deliveries were 39.

FREIGHTS HOLD

Rates Unchanged Although Some Shippers Delay in Hope of Drop — Market Still Unsettled on Pacific

Moore & MacCormack, having established a direct American line to Ireland, will extend their services to French, Belgian and Swedish ports. The Dollar line has just sent its first return ship from the Pacific on the run established this year out of New York.

Subsidiaries of the International Mercantile Marine have been active during the past month. This company has petitioned the state department for permission to operate freight and passenger services between New York and a Russian port, probably Odessa. The CLEVELAND, turned over to the White Star line, has been placed in service between New York and Liverpool. The Red Star line is inaugurating a freight service between Montreal and Antwerp.

Among other foreign operations is the scheduled beginning of a regular passenger service between Boston and Liverpool by the Furness line. The FORT VICTORIA will be the first vessel to sail. The Yankee Mail line will have a service between Vigo, Spain, and Cuba and Mexico. The Compania Sud Americana de Vapores has inaugurated a service between New York and ports on the west coast of South America with the combination steamer RENAICO. The Holland-American line expects to establish a freight service between Rotterdam and San Francisco via the Panama canal.

Some of the larger Dutch shipping interests have effected a combination for their mutual protection. The combination is known as the United Netherlands Steamship Co., eight companies participating, among which are the Royal Netherlands Steamship Co., Royal Dutch West India Mail, Holland-America, and the Rotterdam Lloyd. The Dutch companies have just come through an expensive strike, which tied up their transatlantic passenger services for three months.

Board Sanctions Conferences

Freight conferences held in the United States recently have been participated in by both British and American steamship interests. Such conference agreements in the future must have the sanction of the United States shipping board in accordance with American shipping laws. The Japanese, it is expected, will also join in these conferences. The possibility of bringing all the warring factions together to make for stability in the shipping business has been pleasing to the British and American owners also express complete satisfaction. A more liberal outlook is apparent as a result of this getting together. American interests have been exercising strenuous efforts to establish an insurance pool which will be adequate to take care of American insurance needs, but until that is possible American steamship

people must depend more or less on London. In view of the large number of thefts in transit, the insurance companies are planning to exact separate theft policies, a move which has the sanction of the steamship operators.

Cargoes Now Being Sought

Port troubles have worked havoc with ocean shipping and the end of the labor demands is not evident. The port of New York has been the hardest hit, and ships have departed partly loaded while from one-fifth to one-third of them have been clearing in ballast for southern ports to pick up cargoes. The movement of coal and grain has been held in check by the lack of cars to bring the material to the seaboard. Southern coal ports have been filled with idle coal carriers and rates have been gradually declining. Baltimore to Rotterdam has paid recently $18.25, and the Atlantic range to west Italy $20, although some fixtures have been effected at higher figures for prompt boats.

A moderate business has been done with South America and the rates have held firm at the recently advanced level. Shipping board tonnage seems to have swamped the River Plate market and some steamers that expected to get 25Os from Buenos Aires to the continent sailed to Rio de Janeiro in ballast, where they secured cargoes of ore for New York at from $9 to $10 per ton. The general European trade has been below normal and few vessels have been taxed to capacity, while cargo shipments outside of grain, flour and coal have been practically unknown. The entire trade with foreign nations has been unsatisfactory.

Flour from the northern range has made 120s for Trieste. On the net form of charter, New York to the French Atlantic has paid $17. Orders for timber have appeared in the market, with fair rates offered from gulf ports. Cotton has continued to go over in the liners at $1.50 to $1.75 per 100 pounds to Liverpool-Manchester, and 90 cents to $1.25 to Antwerp-Rotterdam. Petroleum to Japan, China and Australia has been quoted at 75 cents from New York.

An American steamer has been chartered for six months at $7. A few short-term charters on British steamers have been taken on this side. The time and trip charter market has lacked activity.

Rate Changes Delayed

Charter conditions in the north Pacific are somewhat complicated at the present time. A general feeling exists that freights are due for a tumble but thus far the market has held up fairly well in most directions. In some instances, business is being held back in the belief that rates are soon to be lowered while the condition of affairs in Japan has had a generally depressing effect upon the market. Altogether, the situation looks rather uncertain and both shippers and operators are doing business with extreme caution.

A large amount of foodstuffs is held at Puget sound and Columbia river ports awaiting shipment to Europe where an urgent demand exists for flour and wheat. The Grain corporation is trying to wind up its affairs but it still has a large amount of flour on hand. Private operators are preparing to meet the situation and considerable tonnage has been taken for the near future. Recent charters include five shipping board vessels which were taken to carry flour to Alexandria, Egypt, following three similar cargoes already dispatched. While the immediate demands of this trade have been met, additional tonnage for Alexandria, July and August loading, is being sought at $30 per ton. Exporters are offering $35 per ton for flour to Constantinople while vessels for South Africa can obtain $27 per ton for flour. Tonnage for Great Britain and the north of Europe is in demand and while the flour rate has not yet been stabilized, it is understood to have ranged from $20 to $25 per ton.

Exporters are anticipating a heavy movement of wheat from north Pacific ports to Great Britain and Europe during the coming fall. This means the reversion of the trade to its former custom of shipping the unmilled grain rather than the finished product, which custom was reversed during the last three years while the Grain corporation was in control.

Lumber Movement Is Active

In the lumber business, a vessel has been taken for railroad ties at $46 from British Columbia to Great Britain. This rate is regarded as considerably below the basis being paid for lumber for which the regular liners are asking $60 per thousand. An order for 56,000,000 feet of ties has been placed on this coast and additional tonnage to move this cargo to Great Britain is now being negotiated.

The coastwise movement of lumber is extremely active on a basis of $9 to San Francisco and $10.50 to southern California. To South America lumber rates have slumped slightly, it being reported that tonnage has been taken for lumber at $32.50 as against a recent going rate of $35 to $36. To the Hawaiian islands, lumber rates remain firm at $16 and $18 while to the Orient, lumber is being moved in large quantities at about $37.50. It was expected that this rate would drop because of heavy offerings of space but so far shippers have been unable to get better price except in a few instances where it is reported that steamers have been taken on at a basis of $35 per thousand feet.

The flurry in Japanese banking and business circles has resulted in a general contraction of business with that country. Extension of letters of credit has been refused and in some instances orders have been cancelled. With ample steamship service on the route, operators are now soliciting cargo and abundant space is available for all shipments offered. Despite this fact, the rate to the Orient is still on a $12 basis for weight cargo, although it is reported that one firm has offered to book freight at $10.

The decision of the shipping board to permit conferences at the various important shipping centers of the country is hailed with delight by ship operators as it will permit them to meet unexpected conditions as they arise. The general effect will be to stabilize freight prices and with differentials established for each port, none will have a marked advantage over its competitors.

Boston's Exports Increase

Railroad transportation difficulties which seemed so detrimental to marine shipping from the port of Boston in the early part of May have actually been the cause of much increased export tonnage during the past few weeks. New England manufacturers finding it impossible to ship by rail to New York for export have been forced to turn to Boston for an outlet. This has

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cu. ft.	Cargo 100 lbs.	‡Finished Steel	Coal from Virginia cities
Liverpool	$ 0.60	$ 1.00	$ 1.50	$ 0.65	$ 0.50	$ 1.00	$10.00 T	.....
London	0.60	1.00	1.50	0.65	0.50	1.00	10.00 T	.....
Christiania	1.00	1.25	2.00	1.05	0.70	1.50	15.00 T	$22.00 T
Copenhagen	...	1.25	2.00	1.05	0.70	1.50	15.00 T	22.00 T
Hamburg	0.75	1.00	1.67½	0.90	0.65	1.25	14.00 T	22.00 T
Bremen	0.75	1.00	1.67½	0.90	0.65	1.25	14.00 T	22.00 T
Rotterdam	0.75	0.75	1.55	0.70	0.50	1.00	8.00 T	19.00 T
Antwerp	0.75	0.75	1.55	0.70	0.50	1.00	8.00 T	20.00 T
Harve	0.90	0.90	1.57½	0.90	0.60	1.25	8.00 T	18.50 T
Bordeaux	0.90	0.90	1.57½	0.90	0.60	1.25	8.00 T	18.50 T
Barcelona	30.00 T	30.00 T	2.00	30.00 T	—30.00 T—		18.00 T	23.00 T
Lisbon	30.00 T	30.00 T	2.00	30.00 T	—30.00 T—		18.00 T	20.00 T
Marseilles	1.00	1.50	1.90	1.25	0.70	1.50	15.00 T	23.00 T
Genoa	1.20	1.10	1.47½	1.00	0.65	1.20	12.00 T	21.50 T
Naples	1.20	1.00	1.47½	1.00	0.65	1.20	12.00 T	21.50 T
Constantinople	23.00 T	28.00 T	...	23.00 T	—28.00 T—		18.00 T	26.00 T
Alexandria	...	28.00 T	...	20.00 T	—30.00 T—		20.00 T	26.00 T
Algiers	...	1.80	...	1.25	—35.00 T—		20.00 T	22.00 T
Dakar	23.00 T	23.00 T	...	23.00 T	—23.00 T—		20.00 T	.....
Capetown	...	...	...	30.00 T	—27.00 T—		20.00 T	.....
Buenos Aires	...	...	...	...	—20.00 T—		12.00 T	13.50 T
Rio de Janeiro	...	...	1.75	...	—18.50 T—†		12.50 T†	14.50 T
Pernambuco	...	...	...	...	—19.00 T—		13.00 T†	15.00 T
*Havana	0.51½	0.57½	0.56½	0.51½	...	...	0.56½	.....
Valparaiso	1.18	1.18	1.02	1.02	...	...	18.00 T	.....
San Francisco	...	0.75	...	0.75	...	...	0.72	.....
Sydney	...	...	...	...	25.00 to 30.00 T		18.00 T	.....

T—Ton.
*A supercharge of 25 per cent is added to the Havana rate owing to the congested conditions of the harbor.
†Landed.
‡Heavy products except rails.

brought a decided impetus to the shipping from the northern port. Rail embargoes for the most part have been lifted for export business with the result that large quantities of grain and produce from the west and north have found their way through to Boston and Portland, Me., for shipment to Europe and South America. The Sprague line operating service to Scandinavian ports has experienced an exceedingly strong demand for space, the commodities including large quantities of agricultural machinery, automobiles and trucks, machine tools of all sorts, flour, grain, shoes and textiles. Nearly all lines report a healthy increase of business during the past month and the export situation appears decidedly favorable. Imports have not kept pace with the exports and return trips in some cases have been in ballast. A recent arrival from India contained a $2,000,000 cargo of raw rubber, indigo, jute, tea, rice and manganese ore.

Government figures covering the total trade of the port of Boston show exports for the year ended March 31, 1920, to be $287,065,087 as against $226,313,216 for the year ended March 31, 1919. Imports for the year ended March 31, 1920, amounted to $384,401,388 as against $264,828,967 for the year ended March 31, 1919. The cotton imports during March, 1920, amounted to $24,333,000 which is a higher figure than reached by the cotton imports for the full year ended March 31, 1919. The single commodity showing the largest import value is wool and for export is meat and dairy products with leather second. April, May and June statistics in detail are not yet available.

Several new lines have been started within the past month from the port of Boston. One of these is a freight and passenger service operated by the United States Mail Steamship Co. to Bremen.

U. S. Coal Trade Interests British

From Our European Manager

LONDON, June 10. (By cable.)—Market for ocean freights continues easy in a month which has been marked by relatively slight changes in rates or in offerings of goods. Interest still centers particularly around the American coal trade, fixtures having been made at a lower level. Restrictions in the output of coal have brought about an excess of tonnage available for carrying fuel and British coal cargoes to Port Said are now down to 65s. Conditions in the Far Eastern trade continue unsatisfactory and rates are weak at 100s, Bombay to the United Kingdom. Java to New York on sugar is also weak at 130s for July loading. From lower Plate ports to the United Kingdom grain is being taken at 115s. On general cargo from Liverpool to Baltic ports a schedule of 45s is quoted. General easiness in the ocean freight market is causing some British shipowners to consider cancelling orders for vessels.

U. S. Ship Sales Can Be Financed

Transfer of Government Vessels Simplified by New Merchant Marine Act—Federal Financing is Essential

BY JOHN W. HILL, FINANCIAL EDITOR, MARINE REVIEW

ENACTMENT by congress of the Jones measure, with its direct command to the shipping board to dispose of the government's merchant fleet to private purchasers, incorporates, for the first time in the history of the United States, a comprehensive national merchant marine policy into the law of the land. The act was framed with the ends in view of having the government retire from the shipping business and of encouraging the development of a strong and profitable, privately owned, American merchant marine.

Many of the features of the new law, including the excess profits tax exemption for a period of 10 years, for American owned vessels engaged in foreign trade and the provision giving preferred mortgage liens priority over repair liens, are designed to insure the promotion and maintenance of a merchant fleet and to improve the status of ship securities in the investment market. As a means of facilitating the sale of the shipping board's vessels, by far the most important provision of the new measure is that sanctioning a liberal policy of governmental financing of purchases.

Financial authorities who have studied the situation agree that it would be impossible to interest private capital to the extent of immediately absorbing all, or any considerable part of, the government's $2,500,000,000 to $3,000,000,000 investment in ships. Consequently, congress has provided that vessels may be sold on a deferred plan covering a period not to exceed 15 years in the case of American purchasers and 10 years in the case of sales to a foreign flag. Experts believe that the assumption by the government of the burden of financing ship purchases instead of throwing it upon the already overstrained investment market, greatly simplifies the problem of disposing of the fleet.

Assuming that the entire fleet were to be sold to American operators, the purchase could be financed for from $250,000,000 to $300,000,000 in cash on the basis of the 10 per cent down payment, as provided in the Meyer's plan which is understood to be favored by the shipping board. As a matter of fact, however, a considerable part of the government tonnage, including wooden and many of the numerous smaller coal burning ships under 6000 deadweight tons will not prove attractive to American purchasers. These types of ships are being sold to foreign buyers. Eliminating troop ships, and tankers, the shipping board owns less than 750 cargo vessels of 6000 tons deadweight and over, whose economies of operation make them desirable for use in foreign trade.

The aggregate tonnage of the ships which are proving most popular with American operators, is about 6,450,000 tons, and even were they to be sold at so high a figure as $200 a ton, their purchase could be financed, with a 10 per cent cash payment, for less than $130,000,000, the remainder to be paid out of earnings. Viewed from this angle, therefore, it is seen that the problem of financing the purchase of the ships by American buyers, is not so imposing as it seems on first appearance. Fifty applications for the purchase of boats are said to be pending in the shipping board's files now.

Summary of Ship Sales

	No. boats sold	Tons, dead-weight	Sales value
Standard terms ..	66	439,644	$78,710,133
Cash "as is"....	34	124,530	5,903,600
Discount for cash	11	40,616	6,238,392
Partial payment ..	11	47,469	6,906,625
Charter purchase .	7	25,050	2,973,000
Option to purchase	3	23,514	5,502,360
Total	132	700,823	$106,234,110

The active program of the shipping board, after all cancellations, and including requisitioned ships, calls for a total of 2311 vessels of 13,592,711 deadweight tons. Of this program about 400 ships of more than 3,000,000 deadweight tons remain to be delivered. Since May of last year the board has been selling ships to private interests and sales to date include about 330 ships or but 14 per cent of the complete program. These sales represent approximately $272,000,000 or 10 per cent of the total estimated value of the fleet and 1,484,734 deadweight tons or 18 per cent of the total tonnage. Steel cargo ships to the number of about 188 or 13 per cent of the steel vessels owned, and 65 wooden ships, or 11 per cent of the total of wooden ships, have been sold.

One of the deterrent influences upon sales in recent months has been the rapidly changing conditions surrounding the disposal of the ships. In view of the increasing tightness of the money market and the lagging buying of vessels, the shipping board since the beginning of the year, has been liberalizing its terms from time to time in order to stimulate purchases. The result, however, in many cases has been to cause prospective purchasers to hold off in the hope of more advantageous terms appearing later.

Sales of the federal ships, during the last 14 months, have fallen into six broad classifications of ship purchase plans, each one of which was subject to variations. These plans of sale included; standard terms; cash "as is"; discount for cash; partial payment; charter purchase, and the option to purchase plan. The standard terms arrangement is known as the Hurley plan, it having been originated by Edward N. Hurley, former chairman of the shipping board. It provided for a cash payment of 25 per cent, plus 12½ per cent at the end of the first six months and 12½ per cent end of the first 12 months, making a total payment of 50 per cent by the end of the first year. Subsequent payments required were 6¼ per cent every six months until the full purchase price was paid. Under this plan but five years were allowed within which to pay for the ship. During the tenure of this plan of ship sales, a new scheme frequently would be adopted only to be abolished, and the Hurley plan readopted.

The charter purchase plan was evolved during the regime of John Barton Payne as chairman of the shipping board. As described before the senate commerce committee by D. C. Hanrahan, in charge of ships sales for the board, it was as follows:

"Two and one-half per cent of the total value of the vessel to be submitted with the proposal to purchase, and to be applied to the cost of the vessel if proposal is accepted. Bareboat charter at $8.30 per deadweight ton per month in advance. When payments have reached an amount equivalent to 50 per cent of the purchase price, plus accrued interest at 5 per cent, title is to pass to the purchasers.

Remaining 50 per cent to be paid in equal semiannual installments during the remainder of five years from date of contract. Interest on deferred payments at 5 per cent per annum."

Like all the rest, this plan had numerous variations. At one time it stood as an offer to sell for 10 per cent down, plus a charter purchase of $8.30 a month, title to pass to the purchaser when 40 per cent had been paid. Late in April an extreme case of the charter purchase plan was evolved when the shipping board required a cash payment of only 2½ per cent, plus a charter-hire-purchase of $5 per ton per month. This sales plan was in effect for a few weeks, but proved popular during the time it was in existence. For the wooden ships special terms were worked out, one providing for 50 per cent initial payment, the rest within 18 months, and the other for a first cash payment of 25 per cent and the balance in three years.

Hurley Plan Favored

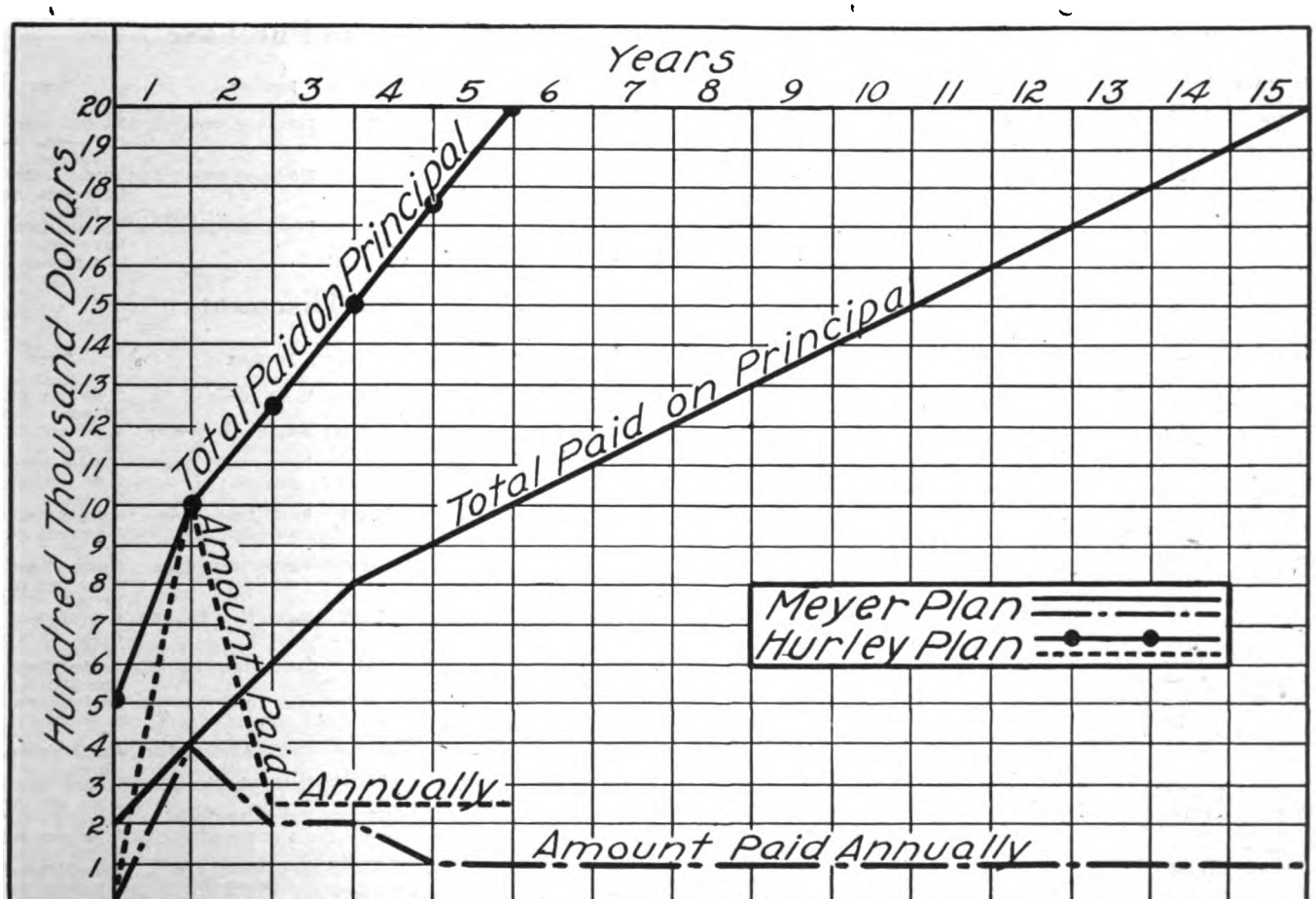
In a total of 132 ships sold by the shipping board of which a compilation with respect to purchase plans has been made by the MARINE REVIEW, it is found that 66 or exactly one-half have been disposed of on standard terms, or the Hurley plan; 34, including many old vessels, for cash "as is"; 11 for discount for cash; 11 on a partial payment plan; 7 on the charter purchase plan, and 3 with option to purchase.

Shipping board officials say that the present market for ships is limited and that it will be impossible to solve the problem of disposing of government tonnage within a brief period. Estimates by officials place the time which will be required as between 5 and 10 years, and in the meantime the government will be compelled to operate the unsold portion of its fleet. The success of the shipping board's efforts to dispose of its holdings depends largely upon the terms of sale and the price per ton, and upon the stability of such term and price policies as may be adopted by the board under the broad authority bestowed by the Jones act. In his testimony before the senate committee on commerce during its hearings on the merchant marine bill John Barton Payne, then chairman of the shipping board, stressed the importance of proper terms if sales are to be made. He said that he regarded it as very important to sell the ships and that he thought it more a matter of terms and confidence; "terms on our part and confidence on the part of the purchasers rather than the prices of the ships."

Pending the passage of the Jones act, Admiral Benson, present chairman of the board, suspended sales of ships. But with the law now on the statute books a definite sales policy is being adopted and will be adhered to by the board. The act authorizes and directs the board to sell the ships, as soon as practicable and consistent with good business methods, at public or private competitive sale and on terms to be fixed by the board.

Prospective Sales Plan

On April 15, an important conference was held in the office of Admiral Benson in Washington for the purpose of securing the aid and advice of representative business men of large producing and merchandising experience in the solution of the problems arising out of the disposition of the government's merchant fleet. A committee headed by Eugene Meyer Jr., formerly managing director of the War Finance corporation, was appointed to present some formal suggestions and recommendations to the shipping board. This report was submitted on May 8 and has been accepted in principle by the board, which is now working out the details of its sales policy in accordance with suggestions of the Meyer's committee. How the Meyer plan compares with Hurley's



ORIGINAL AND LATEST PLANS FOR SELLING GOVERNMENT SHIPS COMPARED

Record of Vessel Sales Made by U. S. Shipping Board

Standard Terms

Name	Tons Dead-weight	Price D.W.T.	Sales Value	Purchaser	Terms
Steel Construction					
Lancaster	11,572	$225.00	$2,603,475	Imperial Shipping Corp.	Standard Terms
Orleans (ex-Donora)	9,600	220.00	2,112,000	Orleans Steamship Corp.	Standard Terms
Gunst'n H'll	9,400	225.00	2,115,000	U. S. Transport Co.	Standard Terms
Vanada	9,400	225.00	2,115,000	U. S. Transport Co.	Standard Terms
H. F. Merse (ex-Chancook)	9,400	225.00	2,115,000	U. S. Transport Co.	Standard Terms
Betsey Bell	9,400	225.00	2,115,000	U. S. Transport Co.	Standard Terms
Tollard	8,800	220.00	1,936,000	U. S. Transport Co.	Standard Terms
Quinnipiac	8,800	220.00	1,936,000	U. S. Transport Co.	Standard Terms
Nameaug	8,800	220.00	1,936,000	U. S. Transport Co.	Standard Terms
Merrymount	8,800	220,00	1,936,000	U. S. Transport Co.	Standard Terms
West Irmo	8,759	220.00	1,926,980	Imperial Shipping Corp.	Standard Terms
West Islay	8,737	220.00	1,922,140	Imperial Shipping Corp.	Standard Terms
West Caranal	8,562	220.00	1,883,640	Imperial Shipping Corp.	Standard Terms
West Cawthon	8,553	220.00	1,881,660	Imperial Shipping Corp.	Standard Terms
Willpolo (ex-Yaphank)	7,814	215.00	1,680,010	Williams Steamship Co.	Standard Terms
N. Britain	7,814	225.00	1,750,150	J. E. Dockendorff & Co.	Standard Terms
Richmond Boro	7,787	215.00	1,674,205	Williams Steamship Co.	Standard Terms
Amer. Star (ex-Strathnaver)	7,550	215.00	1,600,750	American Star Line	Standard Terms
Waterbury	7,550	215.00	1,600,750	American Star Line	Standard Terms
Orient (ex-Gosport)	7,469	215.00	1,605,835	Orient Steamship Co.	Standard Terms
Sacramento	7,462	215.00	1,604,330	F. & J. Auditore	Standard Terms
Huachuca	7,455	215.00	1,602,825	Orinoco Steamship Co.	Standard Terms
Kosciuszko (ex-Cape Lookout)	7,371	215.00	1,584,765	Polish Amer. Nav. Co.	Standard Terms
Redondo	5,900	210.00	1,239,000	F. & J. Auditore	Standard Terms
Delco	5,100	210.00	1,071,000	Moore & McCormack	Standard Terms
Rock Isl'd	4,300	200.00	860,000	American Northern Norway & W. Indies Co.	Standard Terms
Fire Island	4,300	200.00	860,000	American Northern Norway & W. Indies Co.	Standard Terms
Lake Fisher	4,050	200.00	810,000	Gulf Navigation Co.	Standard Terms
Glendola	3,700	200.00	740,000	Atlantic Fruit Co.	Standard Terms
Glyndno	3,700	200.00	740,000	Atlantic Fruit Co.	Standard Terms
Glendoyle	3,700	200.00	740,000	Atlantic Fruit Co.	Standard Terms
Callabassas	3,695	200.00	739,000	Bella Steamship Corp.	Standard Terms
Ex-Austrian-purchased-steel					
Erny	8,450	147.50	1,246,375	Pol'sh Amer. Nav. Co.	Standard Terms
Ida	7,200	147.50	962,000	Polish Amer. Nav. Co.	Standard Terms
Lydia	5,938	165.00	979,770	F. & J. Auditore	Standard Terms
Clara	5,925	147.50	810,937	Polish Amer. Nav. Co.	Standard Terms
Teresa	5,700	147.50	830,650	Polish Amer. Nav. Co.	Standard Terms
Ex-German-seized-steel					
Honolulu	8,150	100.00	815,000	Moore & McCormack	Standard Terms
Nyanza	7,978	125.00	997,250	Foreign Transport & Merc. Corp.	Standard Terms
Monticello	11,365	149.00	1,693,385	American Ship & Commerce Co.	Standard Terms
Suwanee	11,250	170.00	1,912,500	Polish Amer. Nav. Co.	Standard Terms
Appeles	11,220	159.00	1,783,980	American Ship & Commerce Co.	Standard Terms
Montpelier	9,675	159.00	1,538,325	American Ship & Commerce Co.	Standard Terms
Pequot	8,900	150.00	1,335,000	Wyman Steamship Co.	Standard Terms
Hasco	7,900	.....	1,250,000	French American Line	Standard Terms
Osage	7,220	125.00	902,500	Moore & McCormack	Standard Terms
Wabash	6,775	.....	875,000	French American Line	Standard Terms
Wachusett	6,160	.....	735,000	French American Line	Standard Terms
Sachem	3,800	105.00	400,000	Pacific Mail Steamship Co.	Standard Terms
Wooden Construction					
Natenna	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Zavallo	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Neabsco	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Nawitka	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Itompa	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Horado	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Dalano	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Cowardin	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Beechland	4,700		125,000	Nacirema Steamship Corp.	Standard Terms
Argenta	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Alderman	4,700		553,571	Nacirema Steamship Corp.	Standard Terms
Thala	4,000		553,571	Nacirema Steamship Corp.	Standard Terms
Birchleaf	4,000		553,571	Nacirema Steamship Corp.	Standard Terms
Ashburn	4,000		553,571	Nacirema Steamship Corp.	Standard Terms
Airlie	4,000		553,571	Nacirema Steamship Corp.	Standard Terms
Coyote	3,588		321,352	French American Line	Standard Terms
Mazama	3,500		385,000	French American Line	Standard Terms
Total 66	439,644		$78,710,133		

Cash "As Is"

Name	Tons Dead-weig...	Sales Value	Purchaser	Terms
Ex-German seized				
Wacouta	3,400	445,000	Ward Line	Cash-sold "as is"
Tacony	2,620	300,000	Bluefield Fruit & Steamship Co.	Cash-sold "as is"
Watauga	2,200	235,000	Empress Naviera de Cuba	Cash-sold "as is"
Yadkin	2,898	280,000	Empress Naviera de Cuba	Cash-sold "as is"
Iosco	1,800	174,000	B. W. Lougheed Co., Ltd.	Cash-sold "as is"
Gen. Goethals	5,437			
Gen. Gorgas	5,520			
Gen. Ernst	5,380	750,000	Panama Railroad Co.	Cash
Gen. Hodges	4,065			
Old Wood Construction				
N'thwestern	2,700	10,000	Clinchfield Nav. Co.	Cash-sold "as is"
Composite				
Red Cloud	3,575	200,000	French American Line	Cash-sold "as is"
Kanabec	3,575	200,000	French American Line	Cash-sold "as is"
Wooden Construction				
Yehama	4,005	100,000	Fidelity Trust Co.	Cash
Brookhaven	4,000	315,000	Raporel Line	Cash
Reconstructed Lakers—Steel				
A. D. Mactier	2,920	200,000	George Hall Coal Corp.	Cash-sold "as is"
Adrian Iselin	3,075	200,000	George Hall Coal Corp.	Cash-sold "as is"
Briton	3,850	125,000	Fidelity Steamship Co.	Cash-sold "as is"
Chas. R. Van Hise	7,500	180,000	Morrow Steamship Co.	Cash-sold "as is"
G. A. Flagg	4,250	190,000	Boland & Cornelius	Cash-sold "as is"
E. C. Pope	4,000	100,000	Fidelity Trust Co.	Cash-sold "as is"
Blue Hill	4,000	150,000	Massey Steamship Co.	Cash-sold "as is"
Codorus	4,000	23,000	Int. Bureau of Supplies	Cash-sold "as is"
Maruba	3,800	285,000	Fidelity Trust Co.	Cash-sold "as is"
F. P. Jones	3,850	78,000	Edw. Farley & Co.	Cash-sold "as is"
Saranac	3,860	135,000	R. W. Morrison	Cash-sold "as is"
Manola	3,600	77,500	Davis S. B. & Repairing Co.	Cash-sold "as is"
Frontenac	3,600	85,000	Davis S. B. & Repairing Co.	Cash-sold "as is"
Lake Oneida	3,513	270,000	Astamacho No. 4	Cash-sold "as is"
Lake Mohonk	3,513	270,000	Astamacho No. 3	Cash-sold "as is"
Geo. N. Orr	3,250	1,000	Aeronautical Equip. Inc.	Cash-sold "as is"
N. Wind	3,225	200,000	Fidelity Trust Co.	Cash-sold "as is"
Lucius W. Robinson	2,824	200,000	Geo. Hall Coal Corp.	Cash-sold "as is"
Cleon	2,650	110,000	Edw. P. Farley	Cash-sold "as is"
Ex-Austrian-purchased-steel				
Anna	2,075	87,000	R. W. Morrison	Cash-sold "as is"
Total 34	124,530	$5,903,600		

Option to Purchase

Name	Tons Dead-weight	Price D.W.T.	Sales Value	Purchaser	Terms
Steel Construction					
Deerfield	9,725	255.00	2,479,875	Eldorado Steamship Co.	Standard indenture—opt. to purchase.
W. Catance	8,453	225.00	1,901,925	Eldorado Steamship Co.	Standard indenture—opt. to purchase.
Wis. Bridge	5,336	210.00	1,120,560	French American Line	Standard indenture—opt. to purchase.
Total 3	23,514		$5,502,360		

Cash Discount

Name	Tons Dead-weight	Price D.W.T.	Sales Value	Purchaser	Terms
Steel Construction					
Santa Tecla	3,956	210.00	814,144	W. R. Grace & Co.	2 per cent dis. for cash.
Mineola	3,956	210.00	814,144	Atlantic & Pacific Steamship Co.	2 per cent dis. for cash.
Pt. Bonita	3,750	200.00	742,500	Pacific Mail Steamship Co.	Standard Terms 1 per cent dis. for cash.
Pt. Judith	3,750	200.00	742,500	Pacific Mail Steamship Co.	Standard Terms 1 per cent dis. for cash.
Pt. Lobos	3,750	200.00	742,500	Pacific Mail Steamship Co.	Standard Terms 1 per cent dis. for cash.
Pt. Adams	3,750	200.00	742,500	Pacific Mail Steamship Co.	Standard Terms 1 per cent dis. for cash.
Glorietta	3,700	200.00	684,500	Munson Steamship Line	Standard Terms depreciation allowed 9 mos. at 10 per cent.
Reconstructed Lakers—Steel					
R. S. Warner	4,225	.....	240,508	French American Line	Cash 1 per cent allowed.
North Pines	4,000	.....	178,200	French American Line	Cash-sold "as is" 1 per cent dis.
Saxon	3,229	.....	158,221	French American Line	Cash-sold "as is" 2 per cent dis. all.
Columbia	2,550	.....	378,675	New Orleans & S. A. Steamship Co.	Cash-sold "as is" 1 per cent dis.
Total 11	40,616		$6,238,392		

Record of Vessel Sales Made by U. S. Shipping Board

Partial Payment

Name	Tons Dead-weight	Price D.W.T.	Sales Value	Purchaser	Terms
Composite					
Buckhannon	3,500	90.00	315,000	Buckhannon Steamship Corp.	$75,000 cash, bal. 6, 12, 18, 24 mos. 5 per cent.
Campello	3,500	90.00	315,000	Campello Steamship Corp.	$75,000 cash, bal. 6, 12, 18, 24 mos. 5 per cent.
Steel Construction					
E. A. Morse	9,400	225.00	2,115,000	U. S. Transport Co.	.....
Siboney	4,305		1,125,000	Atlantic Gulf & W. I. Co.	.....
Orizaba	4,305		1,125,000	Atlantic Gulf & W. I. Co.	.....
Reconstructed Lakers—Steel					
America	4,000		140,000	Barber Asphalt Paving Co.	Sold "as is" 25 per cent cash, 25 per cent in 6, 12, 18 mos. 5 per cent int.
Mahoning	4,000		140,000	Barber Asphalt Paving Co.	Sold "as is" 25 per cent cash, 25 per cent in 6, 12, 18 mos. 5 per cent int.
Roman	3,040		152,000	French American Line	Sold "as is" 40 per cent cash, 20 per cent in 6, 12, 18 mos. int. 5 per cent.
Cotopaxi	4,140		375,000	Clinchfield Nav. Co.	25 per cent cash, 25 per cent in 1, 2 and 3 years, int. 5 per cent.
Ex-German-seized-steel					
Rajah	3,229		325,000	French American Line	50 per cent cash, 25 per cent, 6 mos., 25 per cent, 12 mos., 1 per cent dis. 20 per cent cash, balance in 1, 2, 3 years, int. 5 per cent.
Marshall	4,050	192.50	779,625	Henry Ostervold	
Total 11	47,469		$6,906,625		

Charter Purchase Plan

Name	Tons Dead-weight	Price D.W.T.	Sales Value	Purchaser	Terms
Steel Construction					
Lake Flatonia	4,050	200.00	810,000	Internat. Maritime Corp.	Charter purchase plan.
Composite					
Baganito	3,500	103.00	360,500	State Steamship Corp.	Charter with opt. to purchase.
Balosaro	3,500	103.00	360,500	State Steamship Corp.	Charter with opt. to purchase.
Borad	3,500	103.00	360,500	State Steamship Corp.	Charter with opt. to purchase.
Morganza	3,500	103.00	360,500	State Steamship Corp.	Charter with opt. to purchase.
Oyaka	3,500	103.00	360,500	State Steamship Corp.	Charter with opt. to purchase.
Quinnesco	3,500	103.00	360,500	State Steamship Corp.	Charter with opt. to purchase.
Total 7	25,050		$2,973,000		

Recent Sales of U. S. Ships

Ship Sales Feb. 21—April 17

Name	Tons, dead-weight	Price	Amount	Purchaser
Anacortes	7,478	$181.90	$1,300,248.20	French American Line, Inc.
Alamosa	5,375	200.00	1,075,000.00	Manuel Vicente Ribernio
Commack	7,825	215.00	1,682,375.00	Pioneer Steamship Co.
Colthraps	7,825	215.00	1,682,375.00	Pioneer Steamship Co.
Eastern Star	6,699	185.00	1,239,315.00	Standard Steamship Co.
Eastport	6,695	177.64	1,189,299.80	Victor S. Fox & Co., Inc.
Garfield	4,250	174.60	742,050.00	W. R. Grace & Co.
Hatteras	7,467	172.58	1,288,654.86	American Merchant Mariners
Jeanette Skinner	8,660	171.78	1,487,614.80	Victor S. Fox & Co., Inc.
Kenwood Bridge	5,075	200.00	1,015,000.00	Jose Luis De Ansoleaga
Lake Clear	2,875	165.15	474,806.25	Baltimore & Carolina Steamship Co.
Lake Monroe	3,293	170.55	561,621.15	Bull Insular Steamship Co.
Lake Greenwood	3,293	169.20	557,175.60	Bull Insular Steamship Co.
Lake Fighting	4,050	200.00	810,000.00	International Maritime Co.
Lake Harney	2,875	167.85	482,568.75	Oriental Navigation Co.
Lake Lillian	2,875	165.15	474,806.25	Oriental Navigation Co.
Lake Jessup	2,875	165.15	474,806.25	Oriental Navigation Co.
Lake Tulare	2,875	163.80	470,925.00	Oriental Navigation Co.
Lake Otisco	2,875	161.62	464,657.50	Oriental Navigation Co.
Lake Festus	4,050	200.00	810,000.00	International Maritime Corp.
Lake Dunmore	4,185	159.44	667,256.40	American Merchant Mariners
Lake Duane	2,875	200.00	575,000.00	Lloyd Royal Belge
Lake Felicity	2,875	200.00	575,000.00	Lloyd Royal Belge
Lake Huron	3,115	200.00	623,000.00	Lloyd Royal Belge
Lake Worth	3,115	200.00	623,000.00	Lloyd Royal Belge
Lake Champlain	3,115	200.00	623,000.00	Lloyd Royal Belge
Lakeside	3,115	200.00	623,000.00	Lloyd Royal Belge
Lake Forest	2,960	200.00	592,000.00	Lloyd Royal Belge
Lake Michigan	2,960	200.00	592,000.00	Lloyd Royal Belge
Lakeport	2,960	200.00	592,000.00	Lloyd Royal Belge
Lakewood	2,960	200.00	592,000.00	Lloyd Royal Belge
Liberty Bell	7,825	215.00	1,682,375.00	Pioneer Steamship Co.
Meriden	3,700	194.00	717,800.00	General Steamship Corp.
Neponset (Refrig.)	9,725	197.66	1,930,542.00	Elder Steel Steamship Co.
Schroon	7,825	204.25	1,598,256.25	Pioneer Steamship Co.
Santa Malta	9,400	194.89	1,832,000.00	W. R. Grace & Co.
Santa Elisa (P.&F.)	5,325	316.43	1,685,000.00	W. R. Grace & Co.
Santa Teresa (P.&F.)	5,325	316.43	1,685,000.00	W. R. Grace & Co.
Yukon	7,523	186.25	1,401,158.75	French American Line, Inc.
Castlewood	5,141	187.58	964,348.78	Victor S. Fox & Co., Inc.
Knight Island	5,075	200.00	1,015,000.00	Lloyd Royal Belge
Long Island	5,075	200.00	1,015,000.00	Lloyd Royal Belge
Staten Island	5,075	200.00	1,015,000.00	Lloyd Royal Belge
Fisher Island	5,075	200.00	1,015,000.00	Lloyd Royal Belge
Shelter Island	5,075	200.00	1,015,000.00	Lloyd Royal Belge
Piqua	3,909	200.00	781,800.00	Lloyd Royal Belge
Waukesha	3,909	200.00	781,800.00	Lloyd Royal Belge
Middlebury	3,909	200.00	781,800.00	Lloyd Royal Belge
Lynchburg	3,909	200.00	781,800.00	Lloyd Royal Belge
Aurora	3,900	200.00	780,000.00	Lloyd Royal Belge
Hamlin	5,075	200.00	1,015,000.00	Manuel Allande
E. D. Doheny III	12,775		1,014,805.30	Pan-Amer. Pet. & Trans. Co.
W. L. Steed	9,030		725,716.65	Pan-Amer. Pet. & Trans. Co.
Wilhelm Jebson	10,350		1,661,562.50	Pan-Amer. Pet. & Trans. Co.
Gray Cloud	4,000		315,000.00	Raporel Line.
Armenia	6,982	100.00	698,200.00	Victor S. Fox & Co., Inc.
Ascutney	6,450	125.00	806,250.00	Wyman Steamship Co., Inc.
Coosa	2,625	100.00	262,500.00	Victor S. Fox & Co., Inc. and Georges Creek S.S. Co.
Isonomia	6,020	114.62	690,000.00	Victor S. Fox & Co., Inc. and Georges Creek S.S. Co.
Neuse	6,890	135.00	930,150.00	Wyman Steamship Co., Inc.
Nipsic	2,500	95.00	237,500.00	Madrigal & Co.
Oconee	4,116	106.00	432,075.00	E. H. Green & Co.
Pawnee	7,200	124.00	892,800.00	Wyman Steamship Co., Inc.
Quinnebaug	2,000	117.50	235,000.00	British company.
Raritan	1,600	125.00	200,000.00	Torpe & Weise, Bergen, Nor.
Tunica	1,653	135.00	1,033,155.00	French American Line, Inc.
Yazoo	2,200	113.64	250,000.00	Fernandez Hermanos
Yuma	2,500	110.00	275,000.00	Tropical Fruit Co.
Old Tonnage				
Arapahoe	3,000	$55.00	$165,000.00	Victor S. Fox & Co., Inc. & Georges Creek Steamship Co.
Chillicothe	3,500	55.00	192,500.00	
Monongahela	4,150	55.00	228,250.00	
Moshulu	4,950	55.00	272,250.00	
Muscoota	3,750	55.00	206,250.00	
Tonowanda	2,847	55.00	156,585.00	
Sales April 17-24				
Liberty Land	7,825	207.17	1,621,105.25	Italian Star Line, Inc.
Westhaven	8,619	175.38	1,511,600.22	Atlantic Gulf & Pacific, Steamship Co.
Horio	7,540	192.05	1,448,057.00	Georges Creek Steamship Co.
Nyanza	7,978	Lump	1,206,000.00	Moore & McCormack, Inc.
Cape Romain	7,371	177.54	1,308,647.34	Standard Steamship Co., Inc.
Bannack	7,388	202.47	1,495,848.36	Standard Steamship Co., Inc.
Conness Peak	7,825	215.00	1,682,375.00	Pioneer Steamship Co.
Lake Farragut	4,155	186.66	775,572.30	Farragut Steamship Corp.
Ice King (Refrig.)	6,103	188.82	1,152,368.46	French American Line, Inc.
Sales April 24—May 1				
Morristown	7,323	184.80	1,353,290.40	French American Line, Inc.
Shooter's Island	7,249	195.31	1,415,802.19	French American Line, Inc.
Mariner's Harbor	3,539	165.15	584,805.25	French American Line, Inc.
Capillo	7,825	215.00	1,682,375.00	Pioneer Steamship Co.
Monmouth	7,323	187.70	1,374,527.10	Wyman Steamship Co., and Fred. Star Contracting
Cape Henry	7,371	174.92	1,289,335.32	
Selma		Lump	700,000.00	Am. Fuel Oil & Trans. Co.
Lathan		Lump	700,000.00	Am. Fuel Oil & Trans. Co.
Yucca	4,630	115.00	532,450.00	French American Line, Inc.
Powhatan (Pass.)	10,531 gr.		chartered to	Internat. Bureau of Supplies
Sales May 1-8				
Independence	11,868	194.90	2,313,073.20	Georges Creek Steamship Co.
Galesburg	7,323	181.90	1,332,053.70	Wyman Steamship Co.
Englewood	7,323	181.90	1,332,053.70	Wyman Steamship Co.
Westlake	8,548	176.58	1,509,405.84	Victor S. Fox & Co., Inc.
Westbrook	8,640	178.98	1,546,387.20	Victor S. Fox & Co., Inc.
Mount Shasta	7,242	170.24	1,232,878.08	Victor S. Fox & Co., Inc.
Yellowstone	9,140	184.28	1,734,074.80	Victor S. Fox & Co., Inc.
Ollo	3,500	50.00	175,000.00	States Steamship Co.
Hyannis	3,688	50.00	184,400.00	States Steamship Co.
Sales May 8-15				
Westmount	8,682	178.98	1,553,904.36	A. D. Cumming & Co., Inc.
Garibaldi	5,025	174.82	878,470.50	Paragon Navigation Co.
Lake Weir	2,875	200.00	575,000.00	Societe Georgienne
Mercury 10984 gr.		chartered to		International Bureau of Supplies.

plan is graphically shown in the accompanying illustration.

The three outstanding recommendations of the report urge the absorption of the abnormal cost of the ships as war waste; the maintenance of stable prices and terms over an extended period, and the financing of the purchases by the government, by means of 10 per cent cash payment with installments covering a period of 15 years. The report makes specific recommendations, also, regarding the whole subject of ship sales, emphasizing the need for extreme care on the part of the shipping board to sell ships only to responsible persons, who plan to go into the shipping business on a substantial and permanent basis. The report which is expected to form the basis of the shipping board's future policy in selling the ships, follows:

"In connection with the terms, which have been arrived at with a view to making it possible under present financial conditions for buyers to arrange the necessary financing, your committee recommends that purchasers be required to render carefully supervised and audited accounts of operations and earnings on these ships, in such a way as seems well to your board.

Urge Adequate Return

"Out of the earnings, after providing for the interest, taxes, and current installment payments on account of principal, an adequate return on the actual capital invested should be allowed the purchasers; after such adequate return on the investment at a rate to be fixed by your board, surplus net earnings should be applied to additional payments of the installments of principal. The committee would consider it preferable to have the anticipation of such installments, if any, applicable to the last installments due, but feels that a certain amount of discretion should be exercised upon this point by your board, and it may be advisable to have this clause contain some elements of elasticity so that anticipated installments may be in whole or in part applied to installments falling due in a period of possible business depression.

"Interest should be charged at the rate of six (6) per cent per annum, and the shipping board should have full protection by insurance on all marine risks and fire.

"A discount of five (5) per cent for cash payment in full on the delivery of the ship should be allowed. In cases where cash is not paid in full on delivery of the ship, the committee suggests the buyer be given the right of a cash discount of two and one-half (2½) per cent in case of full payment for the ship at any time within five years from the date of delivery.

"Parties making purchase contracts should be protected against unequal competition from operating contracts upon unduly easy terms in connection with ships still unsold.

"It would seem proper, in view of the fact that the ships constitute a capital asset of the United States government, that the funds received on account of repayment of principal should be applied to the redemption, at market prices, of Liberty loan bonds or Victory loan notes. Should your board have occasion to recommend legislation to congress, your committee suggests that you include a recommendation to this effect."

Bankers who have devoted much thought to the matter of marine securities believe that if the government will carry the obligations of purchasers of ships over an intervening period, time will be allowed for a country-wide educational campaign to acquaint investors in this country, as in England, with the merits of such issues. In addition, ships will have established an earning record which if favorable will be a material aid in selling marine bonds. The Great Lakes region is the only section of the country where ship mortgages have been popularized as investments. In the last two decades, more than $100,000,000 of marine securities have been floated in that district without a single recorded loss. One investment banker, E. G. Tillotson, of Tillotson & Wolcott, Cleveland, who has had wide experience in ship security flotations, predicts that the Great Lakes investment market soon will be in a position to absorb a large amount of marine mortgages.

Investors Are Ready

"Due to the large earnings of the war period," says Mr. Tillotson, "the $20,000,000 of shipping bonds outstanding in 1914 have been reduced to about $3,000,000. Investors educated to this form of security, therefore, will be in a receptive mood when general credit conditions improve. At the present time marine, as well as other issues, can be floated only at almost prohibitive rates, the prevailing return for recent marine mortgages being 8½ per cent as compared with 7¼ per cent in January. I believe that the entire country is gradually awakening to the desirability of marine investments as well as their importance if we are to develop a great merchant marine."

Inclusion in the new law of a provision giving preferred mortgage liens priority over liens created by contract including repairs, etc., but excepting wages, towage and salvage, and giving jurisdiction to the United States court to foreclose such a mortgage, is approved by investment bankers. On the Great Lakes where ships do not get far away, the old law establishing the priority of repair liens has

(Concluded on page 388)

Terms For Ship Sales

ON APRIL 15, an important conference of leading business men and bankers was held in the office of Admiral Benson. A committee was appointed headed by Eugene Meyer Jr., formerly managing director of the War Finance corporation, to frame formal recommendations to guide the shipping board in devising a policy for selling its ships. This committee submitted its report on May 8 and its principles have been accepted by the board. The outstanding recommendations were:

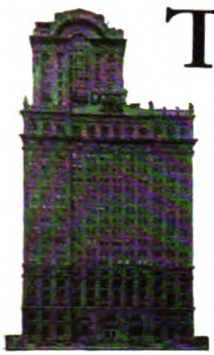
FIRST: *As the ships were built as a war measure and in a period of abnormal and excessive cost due to war conditions and to the fact that the industry had to be built up as a substantially new industry in this country, the abnormal cost should be absorbed as war waste, and the prices should be fixed upon the basis of present prices for reproduction, considering both foreign and domestic production costs;*

SECOND: *The prices should be determined in a manner to assure stability, either by fixing prices for ships of given types and tonnages which could be maintained over a period sufficiently long to give buyers the assurance that after they have contracted for purchases of ships they will not be placed at a disadvantage by subsequent reduction in prices, or by fixing prices with definite protection to buyers over a definite period, such protection to consist of an arrangement under careful safeguards for price readjustment should it subsequently prove necessary or desirable for the shipping board to reduce prices.*

TERMS: *Ten (10) per cent cash payable on delivery of the ship, with payments at the rate of 5 per cent semiannually for three years, making a total of 40 per cent to be paid in by the end of the third year; the balance or 60 per cent, to be payable in 12 yearly installments of 5 per cent each.*

Shipowners Form Strong Society

Holders of Vessel Property Have Powerful Association to Aid in Advancing American Marine Interests



Whitehall Building

TAKING a leaf from the book of the Lake Carriers' association, the owners of ocean-going ships of American registry have established a strong organization among themselves for mutual counsel in their business and for concerted action on the many pressing problems which present themselves with frequency in the administration of the country's now vast shipping business. The organization of the Great Lakes shipowners, while not serving actually as a model for the seagoing owners in their new departure, is sufficiently well known to them to have influenced their thought in aiming to secure the same ends as those sought by the Great Lakes men, by the same means. In other words, the owners of American seagoing ships have decided that in union there is strength. It is an age of greatly broadened effort in national seagoing and one in which modern business methods must be used to the utmost. The seagoing owners not only are following the example of the owners of the great fresh water fleets, but of the leading men in all other groups of big business in all sections of the United States. Their action is in accord, therefore, with what has proved to be sound business practice in general, and with a modern movement in American shipping business methods in particular, a movement in which the Great Lakes owners were pioneers. The following describes the work being done by shipowners of the two coasts and the gulf, a work that proves the days of the lone hand in shipping to have gone forever.

Team work is the keynote of the efforts of American shipowners to maintain as a growing and profitable institution the great merchant marine fleet which was created as a result of the war and is being developed and balanced to meet the demands of peaceful world trade. Mutual effort for the common good, a closely knit alliance of the various units of the shipping business in matters of policy affecting its general welfare, with means for an interchange of ideas and information with allied interests of national scope, form the basis of new business methods in the American shipping world.

In the early days of American shipping, now chiefly recalled for the triumphs of the clipper ships, no owner conferred with his competitor on the development of trade routes or the study of economic problems in the shipping business. It was a period of every man for himself among American shipowners, and secrecy was the main stay of each individual's ventures. This was carried so far at one period at the old port of Salem that ships were fitted out by stealth and sailed at night. One Salem ship made three voyages to Sumatra for pepper, and earned a fortune for her owner before competitors could discover the source of her cargoes. Today such a system is impracticable, nor is it to be desired. The trade map of the world lies before every shipowner, with its every sea route designated. The route on which a ship sails usually is announced in advance. Her freight rate is fixed in competition with other ships of her own and other flags. A ship no longer sails into silence and mystery when she leaves port. She is in daily touch with other ships or the shore by means of the radio. Her consignee or agent in

H. H. RAYMOND

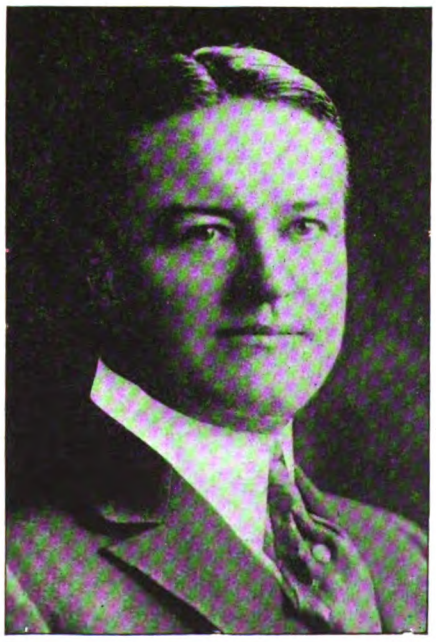
President of the Clyde and Mallory lines and president of the American Steamship Owners' association

EDWARD J. BARBER
President, Barber Steamship Lines, Inc., and vice president, American Steamship Owners' association

ALFRED GILBERT SMITH
President, New York & Cuba Mail Steamship Co., and chairman, committee on depreciation, American Steamship Owners' association

FRANKLIN D. MOONEY
President, New York & Porto Rico Steamship Co., and member, committee on managing agency agreement

P. A. S. FRANKLIN
President, International Mercantile Marine Co., and member executive committee, American Steamship Owners' association



OAKLEY WOOD
Vice president, Barber Steamship Lines, Inc., and acting chairman, committee on managing agency agreement

CAPT. EUGENE E. O'DONNELL
Manager, marine department, C. H. Sprague & Son, and chairman, committee on wages and working conditions aboard ship

a distant country is advised by cable of her departure and by radio of her progress and expected hour of arrival at her destination.

Yet the shipping business is vastly more complex than in the good old days of the sail, when every owner was for himself. Costs are extraordinarily high. Rates in all cases are not adequate to meet those costs, as for example in the coastwise trade. The relations of the ship operator and the men employed on his ships are subject to negotiation and agreements into which numerous troublesome elements enter that were not present in earlier times. Insurance is a complicated and difficult branch of the shipping business; navigation laws, long in need of revision, in many instances are a burden on the shipowner; vast amounts of capital are invested in ships, and to earn adequate returns for these great sums, even with business active, the shipowner must be always on the alert, and must know the ebb and flow of trade in all parts of the world. A community of interests among shipping men, therefore, is logical and inevitable. By such means the shipping men of the country avail themselves of their combined strength and resources in solving the many problems, economic in the main, that arise in a business so vast as theirs and so newly grown to its present proportions. The country invested between $3,000,000,000 and $4,000,000,000 in ships between 1917 and 1920. This great investment is now subject to the test of competition with the mercantile services of other countries. The task of making the investment permanent rests upon the shoulders of the Americans who own and operate ships.

WINTHROP L. MARVIN
Vice president and general manager, American Steamship Owners' association

Fortunately for the American merchant marine, the shipowners of the country when the war began were not without an organization of a national character, equipped to take the lead in concerted action by shipping interests in behalf of the new-fledged fleet and for the protection of the great investment it represented. This was the American Steamship association, a body including in its membership the leading companies owning and operating steamships under the American flag. Organized in 1906 by a number of coastwise steamship companies, the association had grown so steadily that in 1917, when the United States entered the world war and embarked upon the great shipbuilding program that resulted in its present merchant fleet (which by the end of 1921 will embrace 18,000,000 deadweight tons of oceangoing ships), the American Steamship association included in its membership the principal companies engaged in overseas trade under the American flag.

As new companies were formed in the era of rapid shipping expansion that now set in, many obtained membership in the association, which in September, 1919, found an expansion of its organization necessary to carry on its varied and rapidly growing activities. At that time the word "owners" was added to the association's title, and the executive committee, the governing board, was enlarged to 25 to make it more thoroughly representative of the increased membership of the association.

H. H. Raymond, president of the Clyde and Mallory lines and at once a leading figure in the coastwise trade and conspicuous in overseas carrying, who had served as the president of the association for several years, was unanimously re-elected to the presidency. Edward J. Barber, head of the Barber Steamship Lines, Inc., operating to the River Plate, the Orient and transatlantic ports, was re-elected vice president, while Winthrop L. Marvin was elected to the new office of vice president and general manager. Mr. Marvin brought to the office a profound knowledge of shipping problems, and wide experience in securing co-ordination of effort by large business interests. At the same time, the important office of general counsel of the association was assumed by J. Parker Kirlin, one of the foremost admiralty lawyers in the United States.

President Raymond in the strengthened organization has been able to avail himself of the voluntary services of many able men in the shipping business, who, seeing the need of concerted effort by American shipowners, have consented to serve on various committees formed to deal with the vital problems of the merchant marine. Thus in a short time there has been built up an efficient and highly specialized association for dealing with the practical, every-day questions of prime importance that confront shipowners and operators in their regular line of affairs. Now in the summer of 1920, the association's members represent an ownership of not less than 3,000,000 gross tons of steamships under the American flag, or more than three times the amount of the nation's tonnage engaged in overseas trade at the beginning of the war. In addition to this tonnage, the association members operate as agents for the United States shipping board between 4,000,000 and 5,000,000 deadweight tons of the war-built cargo fleet. The aggregate tonnage thus controlled by the association's members (between 6,000,000 and 7,000,000 gross) is nearly equal to the nation's total tonnage, including all ships of the Great Lakes, in 1914.

With the shipping board the nominal owner of the government-built ships, constant and often exhaustive conferences between the board and the shipowners and operators are necessary. With legislation before congress, involving fundamental principles of shipping policy and the future of the merchant marine as a whole, while the new fleet was not yet completed, the shipowners found it advisable to present their views collectively and with unity, clearness and precision.

This has been accomplished through common counsel by the association's members and by sustained and intensive work by its committees. A brief summary of the functions of a few

of these committees will serve to indicate the practical character of the work handled by the association.

Committee on Managing Agency Agreement—The duty of this committee is to deal with matters pertaining to the agreement with the United States shipping board, under which members of the association operate government-owned ships. Members of the committee attend fortnightly conferences at Washington of a joint committee composed of representatives of the shipping board, the shipowners of the Atlantic, Gulf and Pacific coasts, and the United States Ship Operators' association. These conferences deal with affairs involving a greater volume of shipping traffic in one month than half a century ago stood to the credit of the entire American merchant marine in a year. Franklin D. Mooney, president of the New York & Porto Rico Steamship Co., was appointed first chairman of this committee on behalf of the American Steamship Owners' association. During Mr. Mooney's absence on a trip abroad, Oakley Wood, vice president of the Barber Steamship Lines, Inc., served as acting chairman.

Committee on Wages and Working Conditions Aboard Ship—The negotiation annually of a working agreement with representatives of the seagoing unions, on wages and working conditions (in conjunction with the United States shipping board), and the adjustment of all differences between the labor aboard their ships and the members of the association, are the principal duties of this committee, whose findings are the basis of present wage agreements on all American ships plying out of Atlantic and gulf ports. Capt. Eugene E. O'Donnell, manager, marine department, C. H. Sprague & Son, Boston, is chairman of this committee. The names of the other members indicate the representative character of the committee:

Capt. William Anderson, manager, marine department, C. H. Sprague & Son;

A. G. Bates, vice president, Atlantic & Pacific Steamship Co. (W. R. Grace & Co.);

Capt. John G. Crowley, president, Coastwise Transportation Co.;

J. D. Tomlinson, operating manager, American-Hawaiian Steamship Co.;

A. S. Hebble, superintending engineer, Southern Pacific Co.;

E. A. Kelly, assistant to president, Clyde Steamship Co.;

R. C. Thackara, vice president, Luckenback Steamship Co., Inc.;

A. J. McCarthy, manager, American flag steamers, International Mercantile Marine Co.;

F. C. Osborn, manager, ownership operations department, Munson Steamship line;

Robert F. Hand, assistant manager, foreign shipping department, Standard Oil Co. of New Jersey.

Committee on Depreciation—The question of the proper depreciation to be charged off annually on account of vessels owned, for purposes of taxation and otherwise, has been one of the most vexing to come before the members of the association. This committee sent out a questionnaire to American shipowners, seeking their views on the subject, and embodied the replies received in a report to be submitted to the association and by it to the shipping board and to the treasury department. The chairman of this committee is Alfred Gilbert Smith, president, New York & Cuba Mail Steamship Co.

Another active committee of the association deals with the subject of the revision of the United States navigation laws and rules, including the laws and rules of the steamboat inspection service, which is now being considered also by a special commission appointed by the shipping board. Still another committee of the association is that which deals with accounts and auditing, with especial regard to the accounts of government-owned vessels operated by the shipowners. This committee is composed of auditors of the member companies of the association.

Its own solidarity assured, the association has established close relations with other shipping associations in the country. These include the following:

United States Ship Operators' association, New York.

Pacific American Steamship association, San Francisco.

Puget Sound Shipowners' association, Seattle.

New Orleans Shipowners' association, New Orleans.

New York Boat Owners' association, New York.

Lake Carriers' association, Cleveland.

National Board of Steam Navigation, New York.

Other business associations with which the American Steamship Owners' association is in close touch include the following:

American Manufacturers Export association, New York.

National Foreign Trade council, New York.

National Association of Manufacturers, New York.

Atlantic Coast Shipbuilders' association, New York.

Through the United States chamber of commerce, the association is enabled to present data concerning the economic phases of the shipping business to business men in all sections of the country. Illustrating this connection, it may be stated that after members of the association had appeared before the senate committee on commerce at hearings on the measure later known as the Jones bill, their arguments, printed in pamphlet form, were distributed to the chambers of commerce of the country through the co-operation of the United States chamber of commerce. Information on the merchant marine and overseas trade is supplied this national body of business men by the association whenever it is requested.

Touch with the banking interests of the country has been maintained by the association through an interchange of views and information with the committee on ship securities, appointed by the United States shipping board from among prominent bankers, with Henry M. Robinson, Pasadena, Cal., as chairman. This committee has made a study of the relation of present shipping values, costs and earnings to popular investment in shipping securities and has submitted its first report to the board.

Other organizations with which the association maintains relations are:

National Marine League of the United States of America, New York.

National Merchant Marine association, Washington.

Navy League of the United States, Washington.

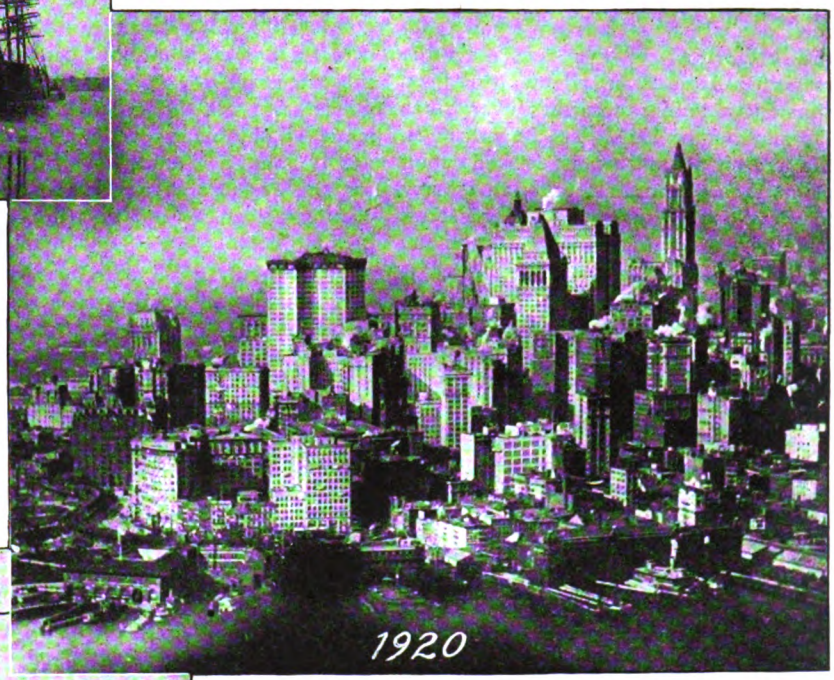
These three organizations disseminate information about the merchant marine through the press and by means of speakers.

To each of the organizations named, the association sends its published communications, and in many cases special bulletins on matters regarding the merchant marine that are of current interest to business men. Furthermore, it has adopted a policy, now in effect, of supplying information of public interest on shipping matters to the business and daily press.

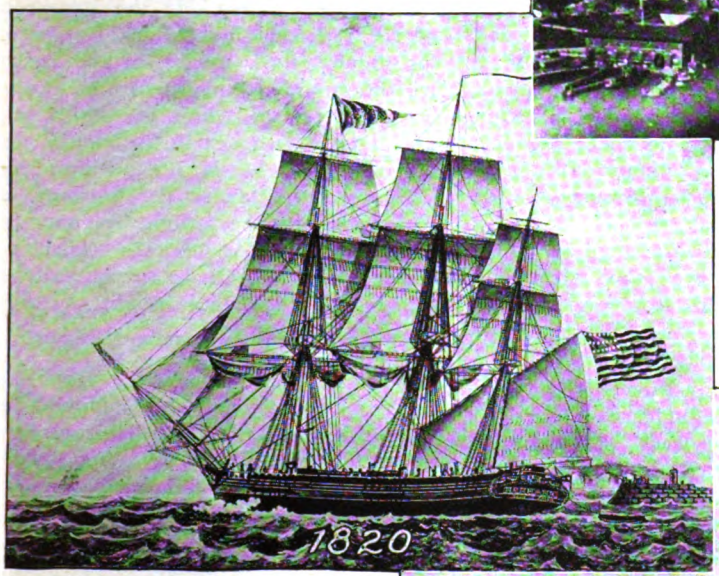
PONCELOT, the fifth all-steel steamer, of the LeParmentier, nonsinkable type, built by the Foundation Co., for the French government, was launched at New Orleans late in May. She is of 4240 tons, deadweight, 328 feet over all, with a beam of 47 feet.

Because of the high and increasing price of fuel oil, the Gulf & International Shipping Co. is changing two of its steamers, BAJA CALIFORNIA and SINALOA, to coal burners.

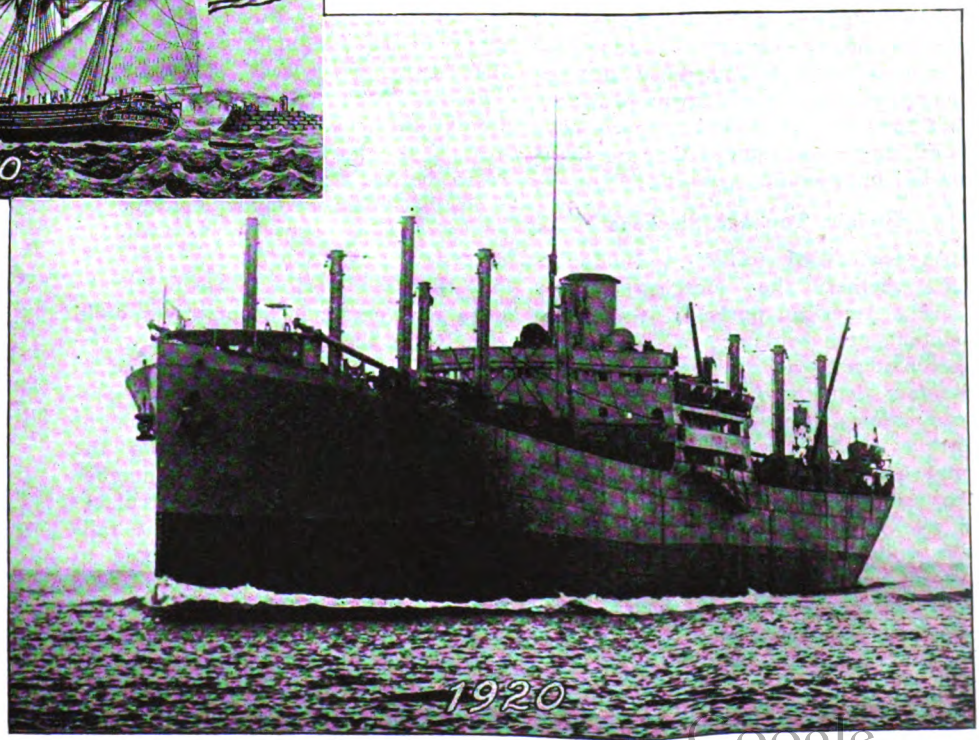
Center of American shipping in 1820, Darby Wharf, Salem, Mass. In the first quarter of the last century, Salem was the foremost American port for deep sea trade, and more rich foreign cargoes were landed at this old wharf than anywhere else in the United States. From a photo in the Peabody museum, Salem, taken about 40 years ago.



Center of American shipping in 1920, Lower Manhattan island. In this great shipping district, the leading owners and operators of American deep sea vessels have their offices. From an airplane photo by Paul Thompson, New York.



Big American steel cargo carrier of today. This vessel with a cargo capacity of 14,000 tons was built during the war.



American cargo carrier of a century ago. Such vessels laid the foundation of America's merchant marine and won fortunes for their owners. This ship, the Erin, registered 270 tons. From a painting by Montardier, a French artist, made in 1819.

Railroads Can Aid U. S. Shipping

Land Carriers Have Opportunity to Promote Development of Merchant Marine—What Railroad Executives Think of Alliance

KEEN appreciation of the merchant marine problem is held in railroad circles, and yet railroad officials as a class have had practically nothing to say regarding the maritime legislation which has been constantly before congress ever since the summer of 1914. To the railroads, the merchant marine is looked upon primarily as a traffic feeder, an agency to develop business for themselves. Whether or not the fleet should be under the flag of the Unietd States is a thing which not all railroad executives are convinced is essential. For instance, Daniel Willard, president of the Baltimore & Ohio railroad, said:

"The American railroads are, of course, interested in the volume of foreign trade primarily to the extent that they participate in the land movement of such tonnage, and indirectly to the extent that such business is helpful to all interests in this country. If the effect of an American merchant marine would be to increase our foreign trade, the railroads would, of course, be benefited by that fact."

Mr. Willard made a blunt statement of railroad policy. But undoubtedly there are extenuating circumstances concerning which the railroads have not had an opportunity as yet to satisfy themselves. As a prominent railroad official pointed out, the roads have had sufficient worries of their own during the past three years and are having the greatest worries of their existence today. They are so consumed with their own problems that they have not had time to consider, much less study, the merchant marine question.

Freight Tonnage Slackens

As feeders of traffic, it is doubtful whether the merchant ships serving American ports are today developing the volume of commerce they fostered prior to the war, despite the fact that the American marine is many times over again as large as during the prewar days. In 1910, a total of 7961 merchant ships entered the port of New York, representing in all 20,933,278 net tons of shipping. The volume of entrances during the current year of 1920 will be less than this amount. Approximately, the American merchant fleet increased during this time from 2,000,000 gross tons to 12,000,000 gross tons, but despite its growth the traffic moved in and out of the ports of the United States has apparently not been appreciably increased. The railroads are forced to measure the value of anything in terms of results in freight movement and on the face of it they are not convinced that all the great expenditures made in shipping by the government, despite the nation-wide hurrah made for the support of an American merchant marine, has established the value of that fleet.

This seeming indifference on the part of railroad men toward the merchant marine development, which the figures would apparently prove to be a business like stand, is, however, forced upon the railroads by circumstances. The inland transportation problem is today most serious. The traffic experts of the country believe it is the more acute problem and the one which is fraught with the greater danger to the public. The railroads are today in no position to move an increased volume of freight. They will not be in any position to increase the freight movement appreciably during the next nine months. Even should the merchant marine development be such as to lay down on American shores vast supplies of new traffic and to move other great piles away, the railroads would not be able to keep the port cities cleared of the traffic thus offered them.

The American railroads scrap normally 100,000 freight cars a year. Just that many cars wear out annually. This means that at least 100,000 new freight cars must be purchased every year if the normal freight movement is to be maintained, and even more than that must be built if traffic facilities are to show a normal and necessary growth.

During the war, it was difficult to have new cars and locomotives built, even when the government finally decided to order them. During the 26 months the railroads were under government control, only 100,000 freight cars were built and added to the equipment of the roads. This number did not take care of normal replacements. Consequently, today the railroads are conservatively estimated to be short 250,000 freight cars, 4000 locomotives and 10,000 passenger cars and Pullmans. The nation is confronted with a serious menace to its business and with great delays in railroad operation and freight movement. With the consuming public beseeching increased production to bring about lower prices of essential commodities, the railroads discover themselves in a position where they will not be able to move the increased production even should the output become an actuality during 1920. The domestic traffic of the railroads is a problem of sufficient magnitude to turn the hair of railroad men gray.

Immediately after their release from government control, the railroads set about adjusting their affairs. The first need was capital for new equipment. The New York Central and the Pennsylvania, the two strongest of the American railroads, made the first attempt to attract investors. The Pennsylvania offered the public a new $50,000,000 issue, but was compelled to offer 7 per cent interest in order to raise the money. If the strongest of the railroads must pay 7 per cent for money, the weakest of the roads will be compelled to borrow at pawnbroker rates. So long as they are forced to pay so dearly for money the railroads will be in no position for joining in the larger development of American transportation by encouraging the sending of the American flag across the sea to carry and to bring back additional freight.

Encouraged by Merchant Marine

On the other hand, there are some railroad executives who undoubtedly foresee a betterment, an improvement of traffic conditions by this larger development. And this improvement will most likely redound to the benefit of the railroads themselves.

"It is doubtless patent to everyone," said F. D. Underwood, president of the Erie Railroad Co., "that the railroads are interested in any scheme of transportation that will relieve the port terminals of Greater New York (which includes the Jersey shore), and in fact the whole Atlantic seaboard, through any medium affording facilities which allow the prompt transfer of commodities from cars to the ship's side.

"There is no doubt that railroads would be benefited by the operation of an independent marine fleet, rather than one operated under government auspices. Government processes applied to ordinary business operations are blighting."

Mr. Underwood's views on the blighting influence of government own-

ership are not held by a few other powerful railroad executives when considering a fleet of commerce carriers. They are not convinced that the government should dispose entirely of its merchant fleet. One important railroad executive confessed that he believed it would be a good policy for the government to continue its ownership of at least a part of the fleet under the plea that it is a naval auxiliary. These ships, he said, should be used in times of peace on the new routes and unprofitable runs in order to develop new channels of foreign trade for America. The development of trade and traffic is an extremely expensive thing and under present economic conditions private capital is reluctant to take the risks. Development of new trade routes, it was held, is a matter which should concern the whole public and the risks should, therefore, be undertaken in the name of the whole public by the government.

From interviews had with various railway executives, the outstanding situation appears to be this:

1. The railroads have too many troubles of their own to become involved in the merchant marine question just at present.

2. Under the existing laws of the United States, it makes little difference to the American railways under what flag the merchant fleet sails. This view would be altered considerably were the railroads permitted and encouraged to invest in shipping properties.

3. The railroads believe that the coming years will bring a greater volume of imports and exports than was ever the case with the United States and, therefore, the physical problem is before the roads to provide adequate facilities for taking care of this increased traffic.

The position assumed by the New York Central lines is typical. A. H Smith, president of that road, said:

"Our lines have always been very much interested in not only the export, but the import traffic and have endeavored, by appointment of men specializing in this class of traffic, to be of service and help in building up that class of traffic. In addition, as is probably known, through our relationship with the American Express Co., we have our own agents at nearly all important cities in the world, whose duty it is to co-operate with our railroads in handling this traffic and be of service to the patrons of our lines.

"From the physical side, we have co-operated in increasing the port facilities at Boston and New York, and now are contemplating a very large development for handling the steamship traffic at New York.

"We also believe that it is necessary for this country to co-operate in helping to restore the tonnage lost through the war."

Canada Ties Land and Water

Railroad men have been watchful of the efforts made in Canada to divert ocean traffic to Canadian ports. The Canadian Pacific railroad has today without doubt one of the greatest international transportation systems in the world. The vast rail system of some 22,000 miles is linked up with a great overseas merchant fleet which the road owns. The Canadian government, in buying up certain other Canadian lines and in constructing a new merchant fleet, is building an international transportation system to rival the Canadian Pacific. In addition, the Canadians are striving hard to open to ocean navigation the Great Lakes and make accessible the vast midwestern territory. To combat, if not to compete with, the Canadian rivals the American roads realize that they must make some desperate efforts.

CONGRESS has recognized the importance of tying up freight carriers, both of land and sea, in an alliance to promote American trade. The remarkable expansion in railroad construction in this country came during the time when the strong American commercial fleet was disappearing from the seas. In too many cases, reports that the railroads assisted in hurrying this decline, were true. Modern economic thought teaches the fallacy of such competition and the accompanying article reveals how the more progressive railroad man of today is planning to unite forces with the revived merchant marine.

Just what the American railroads will do is a problem just now under consideration and is a matter which the roads do not desire at present to bring into public discussion. During the past year, however, a beginning has been made which would indicate their trend of thought. The New York Central, as Mr. Smith pointed out, will build a 1000-foot pier in the port of New York at Weehawken. The Lehigh Valley intends to go even further. The Lehigh's project proposes the improvement of 6 miles of wharfage at Jersey City for ocean ships.

A Railroad Waterfront Plan

In preparation for this improvement, a channel to the shore line will be dredged which will give a depth of 35 feet at low water. The first unit is now under construction. This will consist of a dock 3000 feet long and 400 feet wide. It will carry a warehouse, 300 x 800 feet, and two standard railway tracks will be run alongside the warehouse on the piers and other tracks within the warehouse. The warehouse itself will be double decked so that a ship may load or unload on either deck. On the land side of this pier will be an open freight space equipped with a 30-ton gantry crane. In addition, the pier will be equipped to unload ore, inasmuch as the Bethlehem Steel Corp. intends to use this equipment for the transshipment of the ore which will be brought from Cuba and Chile.

While the ultimate policies of the railroad have not yet been announced, it is understood that the railroad terminals will be so managed that any ship may make use of them. The utility of the properties will be dependent, naturally, upon the amount of traffic that will be brought to the road and, therefore, no exclusive use of the piers could be granted any one particular steamship line.

Any good railroad man will tell you, when he is moved to speak frankly, that the problem of water transportation is inalienably tied up with the problem of land transportation. The railroads have long realized this and have constantly attempted to make profit from it, but have been at times seriously checked in their endeavors. The railroads have been accused of killing inland water transportation, yet under railroad ownership water traffic on the Great Lakes and off the New England coast reached a high mark. Many roads have long felt that good water lines are an absolute necessity to good rail traffic. The New England railroad system built up powerful water lines to New York, Norfolk, Baltimore and other cities along the coast because these water lines insured a feeder traffic which made the rail line prosperous A group of railroads not able to enter New York on account of prior competitors projected a water line from New York to the Virginia cities, where they could make connections.

Railroads Forced to Sell Ships

At the time these developments were at their height, the body politic investigated and concluded that the water traffic of the United States was hampered in its growth by the control by railroads. Consequently, an amendment was made to the Panama canal act which forbade any railroad-owned vessel using that waterway, and furthermore commanding the divorcing of any water property from its railroad ownership where the interstate commerce commission discovered

that the water line was in competition with the owning rail line and where it was thought the ownership was detrimental to the public good. The New England roads were forced to relinquish their control of the so-called sound lines. Some of the coastwise vessels on the Pacific were sold by the railroads, and the Great Lakes fleet passed out of the control of the railroads. This united with war conditions decreased the coastwise fleet of the United States, while the overseas fleet increased during the same period over 600 per cent. With the sale of the Old Dominion fleet on the Atlantic and the sale of some 13 vessels by the Atlantic, Gulf & West Indies Co., the coastwise transportation facilities of the United States are at the present moment threatened with another decrease.

Congress has been guilty of many mistakes, but the railroads are doubtless cognizant of none that has been so disastrous as the amendment to the Panama canal act. In this connection, the words of President Underwood of the Erie are significant.

Poor Legislation to Blame

"The merchant marine problem," said Mr. Underwood to a representative of THE MARINE REVIEW, "has been augmented by laws that mitigate against American ships. Until our ships are operated on a parity with ships operated under foreign flags, American capital will not be invested in ships. The American merchant marine was killed by bad legislation and conditions, and it cannot be restored until both are removed. This should not be difficult of accomplishment—which is not saying that it can be accomplished."

It may bear no immediate fruit, but it is a fact worth while noting that already one member of congress has been led to realize the great damage done when the government decreed officially the railroads should have nothing to do with the development of water lines. A bill was introduced in congress at the last session providing for the repeal of the legislation which prevents the railroads possessing an interest in competitive water lines. When the restrictive legislation was first enacted it was designed to guarantee to port terminals that benefit of water competition which nature gave them. Today when the interstate commerce commission possesses such sweeping powers over railroad rates, such restrictive legislation is useless, if not entirely unnecessary and unwarranted. If that conviction in the end prevails, the interest of the railroads in the American merchant marine will undoubtedly be quickened.

Steamship men declare that their business is the most complex and most difficult profession to learn. One important American steamship head said recently that a man must engage in shipping for a period of five years at least before he becomes productive. The overseas fleet of the United States has been mostly built during the past three years, the greater proportion during the calendar year 1919, complicating the problem of finding or developing men capable of operating steamship routes without further notice. Ocean shipping, like any other shipping, is chiefly a traffic matter. Along these lines, the railroads of the United States already have the greater geniuses. The traffic men working for the railroads have secured salaried positions. It is difficult to tempt them to leave their desks with the railroads and take a gamble on their future before a desk in a new steamship office.

One remedy for this situation would apparently be a more generous attitude on the part of the public and of the government. If the railroads were definitely permitted to align themselves up with overseas steamship developments order would be quickly brought out of the present chaos. American railroads have often looked upon maritime developments as a mere extension of rail transportation. James J. Hill, one of the greatest of the older railroad geniuses, conceived the advantages that would be had. He sought to develop a direct line from the Orient, transcontinental, to the port of New York. The steamships he built for the transpacific service were declared a commercial failure, not because the traffic idea was wrong, but because the ships were not economically designed for this particular trade. Had not Mr. Hill suffered a tremendous set-back in the designing of his marine equipment, it is likely that his dream of feeding the Oriental traffic into New York would have developed into a reality.

While no permanent benefit resulted from the Hill experiment, at least it proved to the world at large that America's railroad men were experts in traffic matters and were ambitious to approach both water and rail transportation as transportation men and solve them in the light of traffic experts. The interstate commerce commission act and its various amendments, the navigation laws and the various shipping laws enacted by congress effectively checked any ambitions along this line. One of the results recognized today is the fact that it costs more to ship general cargo from the port of New York to Havana than it does to ship general cargo to London. English ports are served with the lowest rates to all points of the world, because England has developed a merchant marine under the British flag.

It has also been alleged that another cause contributing to the failure of the Hill transpacific experiment was the unequal competition with the Japanese. Japanese wages were much lower than American, and the cost of operating Japanese ships was much less than the cost of American. In the old days the American ships attempted to meet this competition by employing Chinese crews, but the La Follette act put a stop to that. Then, too, the Japanese lines were subsidized and they were enabled to make preferential through rates with the inland roads in Japan, the result being that a merchant could ship over a Japanese line to the interior point of delivery for the identical charge that would be exacted of him by an American ship between the sea ports.

Differential Rates Provided

That experience has taught Americans something at least, and the effects of it were apparent when the United States senate began discussing the shipping policy bill. An amendment was offered and included in the recently enacted law which permits American railroads to grant a differential inland freight rate on imports and exports that are moved in American bottoms. Railroad executives are understood to be willing to grant preferential rates on goods transported under the American flag. Furthermore, such a law is easy of application. Such discriminatory rates, it must be remembered, however, will not redound to the benefit of the merchant who ships. It will merely mean the giving of a larger division of the through freight charge to the American ship than to a foreign ship.

The longest tow in the history of Pacific shipping has been successfully completed by the tug HERCULES upon arrival at Vancouver, B. C., with the disabled motorship LAUREL WHALEN which was brought from Papeete. The 2381 miles from Papeete to Honolulu were done in 18 days. At the latter port fuel oil was replenished and 18 days additional were required to cover the 2419 miles from Honolulu to British Columbia.

Extensive deep water terminals are to be constructed in Seattle by the shipping firm of Frank Waterhouse & Co. Preliminary work has been completed and it is announced that active construction will begin shortly.

What the Jones Act Contains

Merchant Marine Law is Most Important Shipping Legislation Ever Provided to Aid United States Vessels

GENEROSITY as displayed by the government during the war for the purpose of encouraging shipbuilding, is now to be extended to the business of ship operating. Such is the promise held out to the American merchant marine by the Jones act which was enacted into law during the closing hours of the recent session of congress. The new law, which is the most important shipping measure ever enacted by the United States, aims to build up the American merchant marine by indirect assistance.

In brief, the law ends government shipbuilding and directs the sale of shipping board vessels to private American operators upon easy terms. It authorizes the lending of public funds to private operators who wish to build new vessels. It exempts operators, under special circumstances, from the payment of excess profits taxes. It grants discriminatory inland freight rates on goods which are transported in American ships. It authorizes the repeal of commercial treaties so that discriminatory tariff duties may be imposed in favor of goods imported in American bottoms. It closes American ports to foreign ships which discriminate against American shipping. It authorizes the shipping board to issue "orders in council," which will have the effect of law, for the protection of American ships. It grants modified mail subsidies. It creates a strictly American classification society, encourages American insurance and standardizes ship mortgages in order to encourage the building up of a market for shipping securities.

State Department Opposes

So far reaching was the law that, it was said, even some members of the committee which had a hand in framing it confessed their ignorance of many of its provisions. President Wilson was himself so doubtful of the wisdom of the legislation, from a governmental point of view, according to rumor, that he held a special meeting of his cabinet before he could decide to give it his sanction. It is reported that in this meeting, the secretary of state vigorously opposed the sanction of the law, but that he was out-voted by the secretary of commerce and the secretary of the interior.

The shipping board is left to its own discretion as to the manner of disposing of the government's $3,000,000,000 equity in shipping to private American operators. It is granted a revolving fund for five years to lend to private operators at its will without restriction as to specific accounting, and it may issue rules with the effect of law whenever it pleases for the purpose of building up the merchant marine. In effect, the new act delegates lawmaking powers to the shipping board.

New Board Members

The result promised is that the success or failure of the statute is entirely in the hands of the shipping board, and whether or not the United States is to have an American merchant marine depends entirely upon the caliber of the men appointed to that board. The new board is to be constituted of seven men, two elected from the Pacific coast, two from the Atlantic, one from the Gulf, one from the Great Lakes, and one from the interior. When the measure was enacted, only two men remained on the board, Chairman Benson, and Commissioner Donald. Judging from the political sentiment existing in Washington, and THE MARINE REVIEW has made a thorough personal canvas there, President Wilson will name five new members to the board, but in view of the nearness of the expiration of the present administration, those nominations are not likely to be confirmed by the senate. If the Republicans are successful at the polls next November, the majority in the senate will see to it that the new President shall have the pleasure of selecting the personnel of the new shipping board.

The new law is strictly a nonpartisan measure, but the Republicans had the greater say in its framing. The Democratic heads of the state and treasury departments are critical of its provisions, the one because it dislocates treaty provisions and the other because of the blanket appropriation authority given the shipping board for the spending of public money. Some legislative experts are also critical because congress has clothed the new shipping board with legislative authority.

Washington observers declare that the most remarkable thing is that any legislation got through at all. During the past month or so, the national capital was a hot-bed of lobbyists. Hearst, government-ownership advocates, representatives of foreign steamship interests—all breathed their insinuations into the ears of congressmen. One and all they fought for the defeat of the legislation, only to meet failure.

What the New Law Contains

Stripped of legal verbage, and briefly stated, the new shipping law provides:

Section 1—Announces the intention of congress to have the government do all it possibly can to encourage and maintain an American merchant marine, privately owned and operated.

Section 2—Puts an end to government shipbuilding, permitting only the completion of the building now under way.

Section 3—Creates an enlarged shipping board, composed of seven members with a salary each of $12,000 per annum.

Section 4—Transfers title to the ex-enemy vessels to the shipping board.

Section 5—Directs the shipping board to sell the vessels it has title to, upon whatever terms the board deems best, but limits the time of final payment on such vessels sold to 15 years.

Section 6—Permits the sale of government vessels to aliens if a sale cannot be made to Americans.

Section 7—Instructs the board to establish needed new steamship services by sale or charter of government vessels, and authorizes the postoffice department to grant mail contracts.

Section 8—To facilitate port development and to distribute import and export traffic among various ports, the board may act in conjunction with the interstate commerce commission.

Section 9—Demands marine insurance to be carried on vessels sold by the board on deferred payments.

Section 10—Authorizes the shipping board to establish its own insurance fund to cover ships or other property of the board.

Section 11—From revenues from sales or operations, the shipping board may set aside a fund of $25,000,000 a year for a period of five years to lend to Americans who desire to build ships, the loan not to exceed two-thirds of the cost of such ship or ships.

Section 12—Will permit the board to recondition the ex-enemy vessels.

Section 13—Authorizes the sale of other property owned by the board.

Section 14—Provides for the transfer of excess revenues of the board to the treasury.

Section 15—War department exempted

from payment of charter hire on shipping board vessels used during the war with Germany.

Section 16—Terminates the authorization given the board during the war for building, etc., houses or buildings.

Section 17—Shipping board to take over on Jan. 1, 1921, all terminal properties acquired by the war department during the late war.

Section 18—Prevents the sale of American vessels to foreigners without the consent of the board.

Section 19—Authorizes the board to issue "orders in council" to protect American ships against unreasonable foreign competition, giving such "orders in council" the effect of law.

Section 20—Denies entry to American ports of any vessel which grants "deferred rebates," or to a line which uses "fighting ships," or a line that retaliates against any shipper.

Section 21—Extends coastwise laws to insular possessions and territories of the United States on and after Feb. 1, 1922.

Section 22—Closes coastwise trade to foreign ships.

Section 23—Exempts American steamship companies from the excess profits tax when such funds are invested in new shipbuilding.

Section 24—The mails shall be carried only on American vessels, if practicable, and the postmaster general is authorized to make contracts to that end.

Section 25—The American Bureau of Shipping is made the official classification agency for American vessels.

Section 26—American freight vessels permitted to carry not in excess of 16 passengers.

Section 27—Merchandise shipped between points in the United States must be transported only on American vessels, within certain limitations.

Section 28—Permits discriminatory inland rail rates on goods imported or exported in American ships.

Section 29—Provides law for the creation and encouragement of American marine insurance companies.

Section 30—Standardizes and protects the equity involved in ship mortgages.

Section 31—American seamen may demand and receive one-half the wages due them at any port an American ship stops; foreign seamen on foreign vessels are granted the same privilege in the ports of the United States.

Section 32—No seaman may receive a wage in advance of the time the same has been actually earned.

Section 33—Permits the recovery of damages by seamen for personal injury.

Section 34—Authorizes the repeal of treaties preventing the imposition of discriminating duties on goods imported in American bottoms.

Section 35—Powers delegated the board may be exercised through the Emergency Fleet corporation.

Section 36—If any portion of the law is declared unconstitutional, it is not to abrogate the remainder or any part of the remainder of the act.

Section 37—Defines the meaning of certain terms used in the phrasing of the law.

Section 38—American corporations operating in the overseas trade must have a majority stock issue in the possession of American citizens. Coastwise corporations must be 75 per cent owned by Americans.

Section 39—Stipulates that this law is to be known as the "Merchant Marine Act, 1920."

Book Reviews

Latitude and Longitude, by W. J. Millar; cloth; 54 pages, 4¾ x 7¼ inches, published by Charles Griffin & Co., Ltd., and furnished by THE MARINE REVIEW for $1.00.

This book is now in its third edition and a few additions have been included. Also some minor corrections have been made. The object of the book is to present to the reader in a concise manner, many of the problems that pertain to the finding of a vessel's position at sea through the medium of altitudes of the sun or stars. It is pointed out by the author that no attempt has been made to go beyond this point as the student of navigation must refer to more complete treatises to master the whole science of navigation completely.

The author presents the subject in an exceptionally clear manner and explains each point step by step, which should eliminate confusion on the part of the student. The first part of the book is devoted to an explanation of mathematical expressions, angles, trigonometrical ratios and logarithms. The last named subject is often a stumbling block to many students, especially those of comparatively limited education who have worked their way aft from the forecastle but in the present case the author explains this complicated subject in a simple and thorough manner that should enable anyone who can read and write to master the subject.

How to find latitude and longitude is next taken up. The subject matter is clearly written in nontechnical language and illustrated by numerous line drawings. Many practical examples are included to enable the student to become proficient through actual practice of working out problems.

Sumner's method for finding longitude is fully explained. Ordinarily, this is a difficult problem to attempt to teach by text alone. The explanations are concise and easily understood. Several line drawings. and practical examples are included in this section. A thorough knowledge of this subject is imperative for those who wish to become proficient navigators.

The subject of finding a ship's longitude by sunset observation is thoroughly explained by means of practical examples. The book will prove of value both to students of navigation and as a hand book for navigators who often feel the need of authoritative data in checking up methods used in their everyday routine.

Naval Architect's, Shipbuilder's and Marine Engineer's Pocket-Book, by Clement Mackrow and Lloyd Woollard; leather, 760 pages, 4 x 6½ inches; published by the Norman W. Henley Publishing Co. and furnished by THE MARINE REVIEW for $6.00.

This book is now in its twelfth edition and has been revised and brought thoroughly up to date. It contains all the ordinary formulas, rules and tables required to work out necessary calculations, put in convenient form for ready reference. The work is condensed and practical in order that the naval architect may have at hand reliable data which otherwise often entails a long search through many volumes.

It is pointed out that several elementary subjects are treated more fully than may seem consistent with the character of the book. This was done for the benefit of those who have received a practical rather than a theoretical training. The book would be of little value to such men were they not enabled by means of elementary principles to learn and understand the use of formulas. The book contains a section devoted to aeronautics.

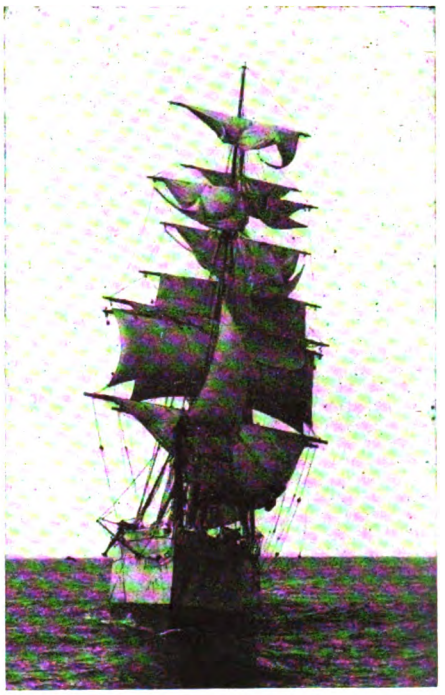
In the present edition the publishers took the opportunity to correct a few errors that had arisen in previous editions and to add a valuable appendix. This section contains some supplementary notes referring to various sections of the book and a comprehensive article on estimating the cost of a merchant vessel. This feature is especially valuable to comparatively small and new shipyards where a definite system is not always in operation. The appendix was written by Colin Bartlett, Lloyd's surveyor.

Modern Sailer Proves Economical

BY FRED B. JACOBS

THAT a definite place in the merchant marine of the world is efficiently filled by sailing vessels, no one who follows maritime progress closely will deny. Although the bulk of the world's commerce has been carried by steam vessels for the last half century, certain conditions are found under which sailing vessels can be made to pay excellent dividends. To understand intelligently what position can now be occupied by sailing vessels calls for a fundamental knowledge of the fast ships of other days, their good and bad points, and the reasons why ships of this type cannot be operated with success today. The man who reads of the marvelous sailing qualities of such famous ships as the RAINBOW, the RED JACKET, the SOVEREIGN OF THE SEAS, the FLYING CLOUD, the GREAT REPUBLIC and other fast vessels of American clipper ship days sometimes questions why ships of this type are not built today. Surely the qualities of the two natural elements with which a ship contends, wind and water, have not changed—why not revive the clipper ship?

FIVE-MASK AUXILIARY BARK FRANCE, THE LARGEST SAILING VESSEL AFLOAT TODAY

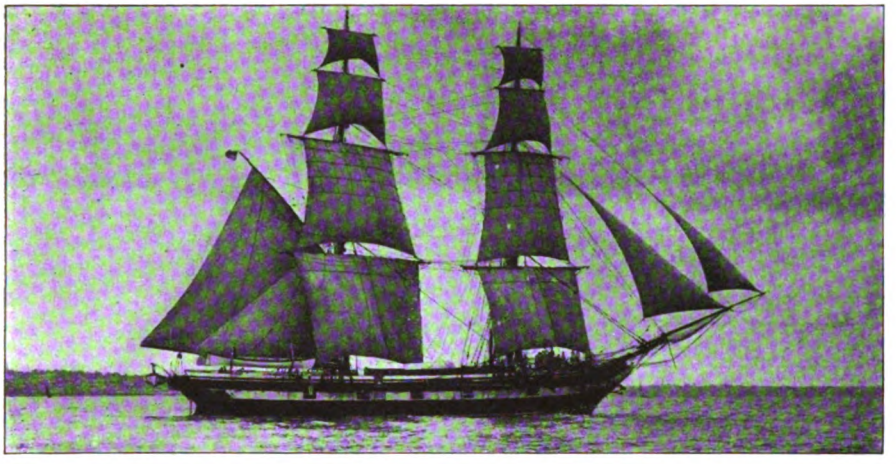


Running Down Her Easting

Before attempting to answer this question, it may be well to consider a few of these vessels. What is known as the clipper ship is an American invention, the initial 3-mast clipper ship being the RAINBOW, a vessel of 750 tons, launched from the Smith & Damon yards, New York, in 1845. Clippers were built before this time to be sure. They were called Baltimore clippers and were generally schooner rigged. Sometimes they were rigged as hermaphrodite brigs and brigantines but they never carried more than two masts so that the Baltimore clipper was not, strictly speaking, a clipper ship.

These Baltimore clippers, however, were fast sailers. They had round pumpkin-like bows, carried high with an excessive overhang. From the bows, the lines ran aft gracefully to a long low lying stern. The beam of these vessels was all out of proportion to their length, the greatest beam being well forward of the vessel's center. The excessive beam gave these vessels the ability to stand a heavy press of sail but they could not work to windward efficiently. Their underbodies were modeled somewhat after a codfish. And from these prerevolutionary war clippers were taken the lines for practically all the merchant ships of this country previously to the advent of the RAINBOW.

These oldtime ships were fast as history proves. As an illustration, THE GEORGE, of Salem, Mass., in 1821 made the homeward run from Calcutta in the remarkable time of 95 days. The following year she made the same pas-



ENGLISH BRIG—THIS RIG IS SELDOM SEEN IN AMERICAN WATERS

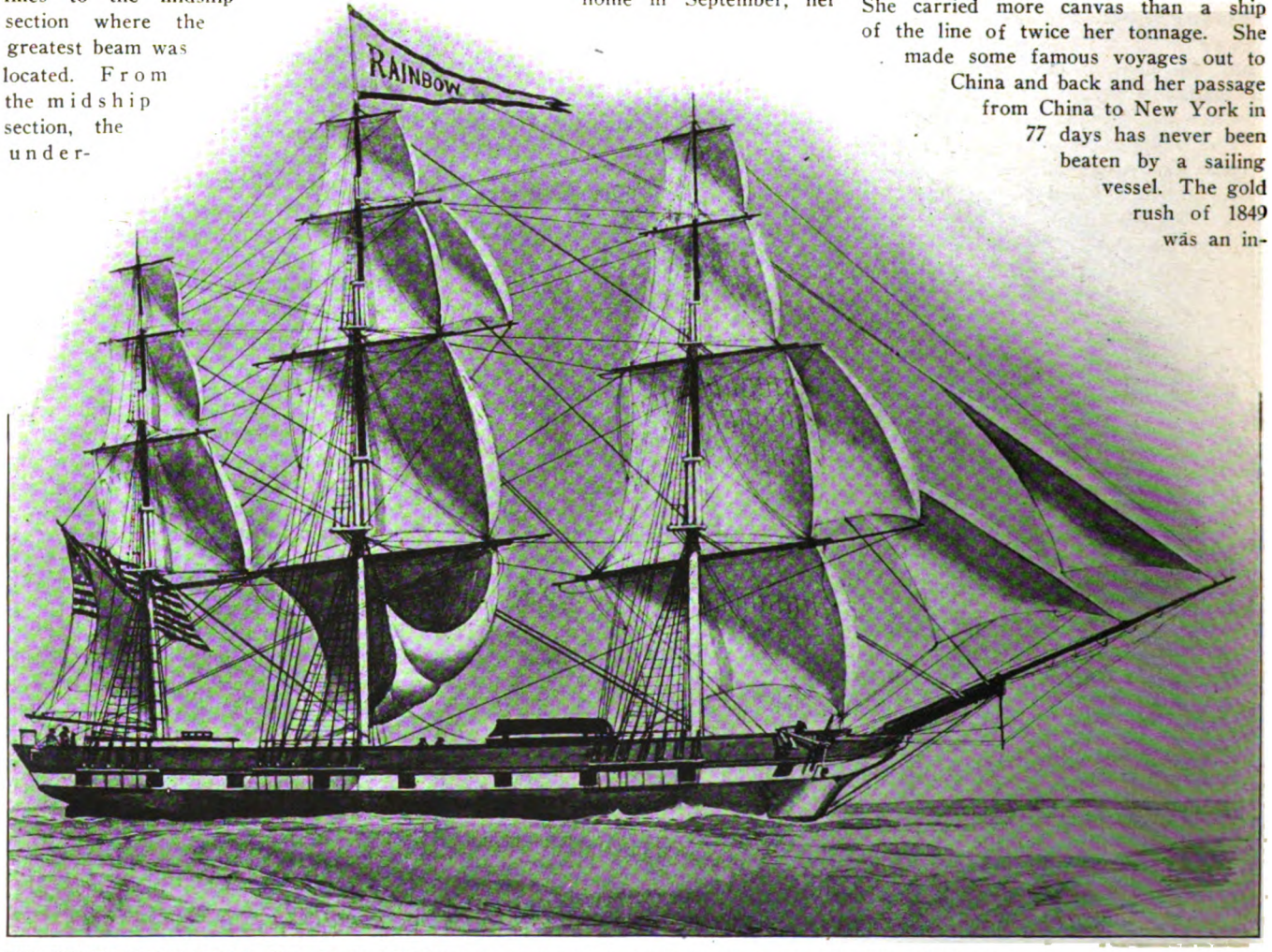
sage in 89 days. This famous vessel made in all 21 successful voyages to India, the running time for a single one never exceeding 100 days.

It remained for John Willis Griffiths, however, to design a ship on entirely new lines; a ship that outsailed any previous vessel that floated-close hauled or running free. This vessel, the famous RAINBOW, had a sharp entrance with a double curve at the water line which ran with easy lines to the midship section where the greatest beam was located. From the midship section, the underbody tapered to the after end with lines almost as fine as those forward. Discarding the codfish like underbody, Griffiths gave his model a dead rise amidships. Predictions were freely offered that the vessel would never float, let alone stand a press of canvas, but after she was launched she more than fulfilled her builder's expectations.

The RAINBOW sailed in February, 1845, for China. Back home in September, her first voyage netted her owners over 200 per cent of her initial cost. It must be borne in mind that it did not cost a fortune to build a ship in those days for the RAINBOW, ready for sea, cost her owners but $25,000. She cleared for China again in October, 1845, and as the months passed by with no news of her, she was given up for lost. Finally one day she was sighted off Sandy hook. The reason that she had not been heard from was that she brought the news of her own arrival at Canton. She was commanded by Captain Land. She was 92 days in making China on this famous voyage as she was compelled to beat up the China sea against contrary winds. On the home run, she made the distance in 88 days. She made a sensation during her short life and is supposed to have been lost off Cape Horn in 1848. On this voyage Land was not master.

Sea Witch Establishes Record

The RAINBOW'S lines were freely copied, both in this country and in England and thus began the real clipper ship days. Griffiths designed another crack ship, the SEA WITCH. When she cleared Sandy hook on Christmas eve, 1846, she was the largest ship afloat. She carried more canvas than a ship of the line of twice her tonnage. She made some famous voyages out to China and back and her passage from China to New York in 77 days has never been beaten by a sailing vessel. The gold rush of 1849 was an in-



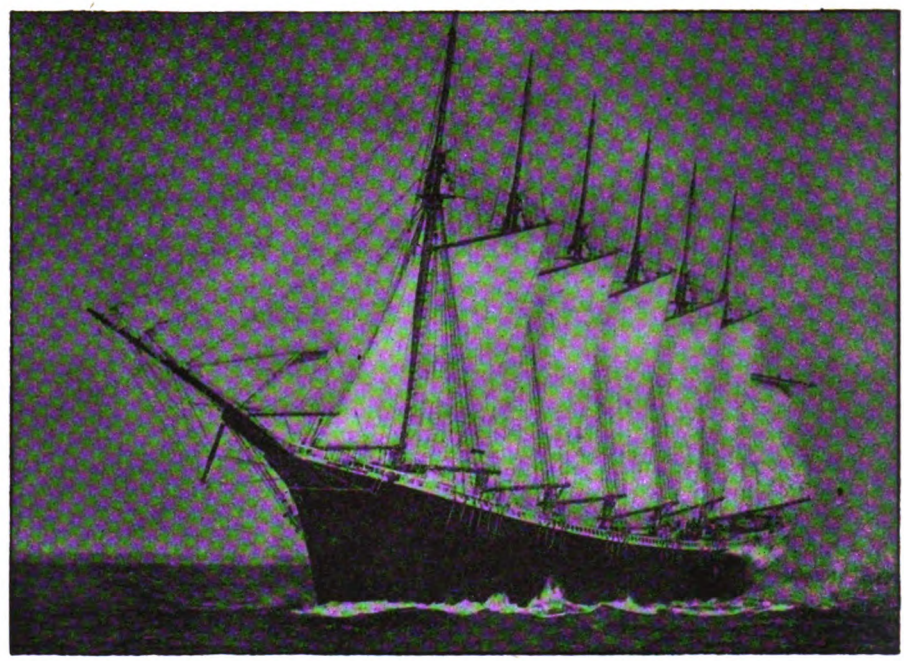
FULL RIGGED SHIP RAINBOW—THIS CRAFT DESIGNED BY JOHN WILLIS GRIFFITHS WAS THE ORIGINAL CLIPPER SHIP AND MARKED A DISTINCT EVOLUTION IN NAVAL ARCHITECTURE

centive for American builders to turn out especially fast ships as quick passages to the Pacific coast were at a premium. During this period, Donald McKay, East Boston, probably the most famous shipbuilder the world has ever known, turned out the FLYING CLOUD. This vessel made a record that stands today. She sailed from New York to San Francisco in the remarkable time of 89 days. On July 31, 1851, according to her log book, this vessel ran 374 miles in 24 hours. Part of this time when squalls were encountered she logged over 18 knots an hour. Her average speed for the 24 hours was over 15 6-17 knots an hour. Nearly a quarter of a century passed by before an ocean steamer attained a speed of 15 knots an hour.

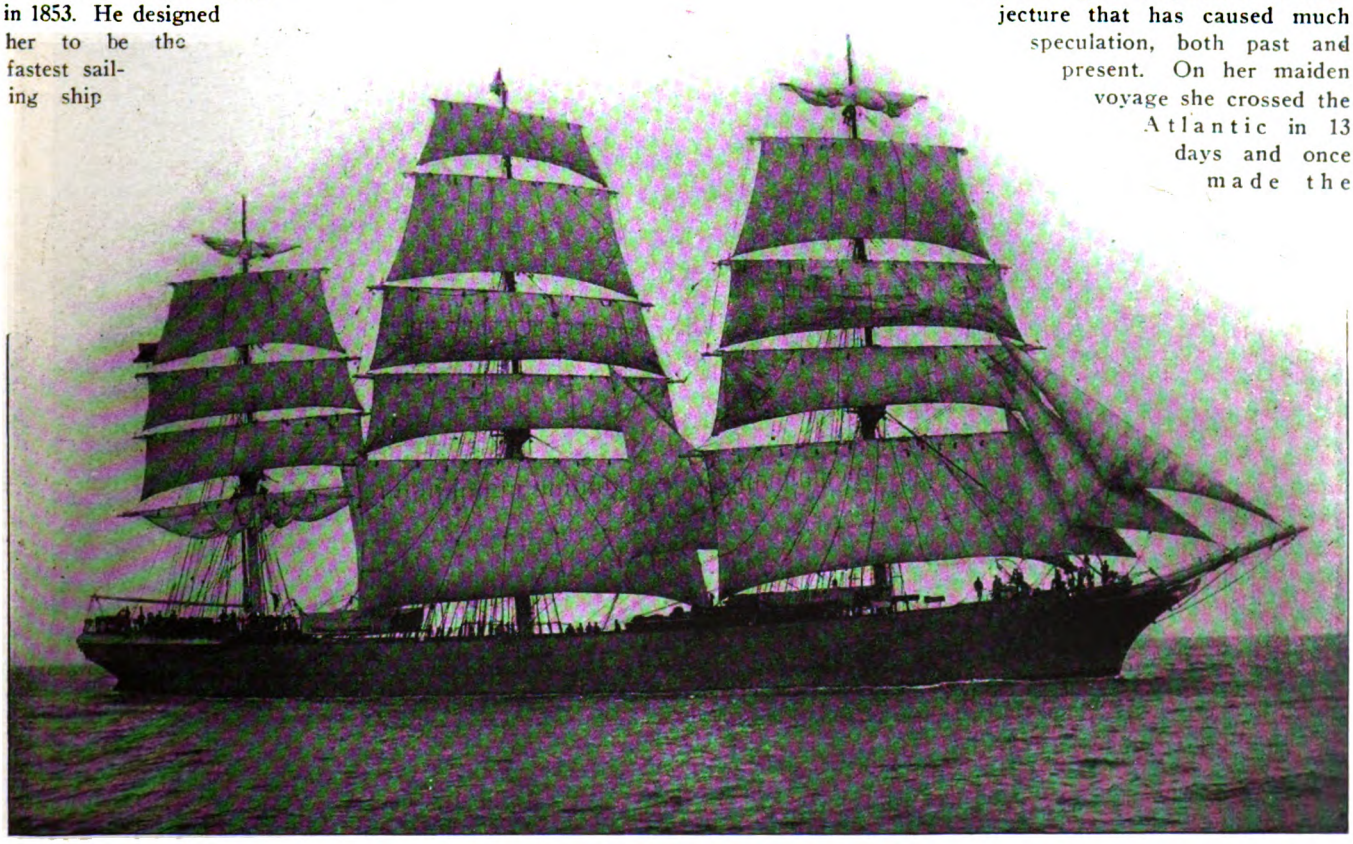
Another famous McKay vessel was the SOVEREIGN OF THE SEAS. On a voyage from Honolulu to New York in 1853 she sailed at a rate of 15½ knots an hour for four consecutive days. During one day she averaged a speed of 17⅛ knots an hour for 24 hours. She made the entire voyage from Honolulu to New York in 82 days. On a later transatlantic voyage she crossed from the Banks of Newfoundland to Liverpool in 5 days 17 hours. Her entire voyage from New York, however, consumed 13 days 19 hours. On this voyage she distinguished herself by outsailing the CANADA, a Cunard liner.

The most famous clipper ship ever built, however, was Donald McKay's GREAT REPUBLIC, launched in 1853. He designed her to be the fastest sailing ship afloat and he sparred her accordingly. Registering 4555 tons, her main mast from the deck to the top of the skysail pole was 205 feet. Her lower fore and main masts were 3 feet 8 inches in diameter, while her mizzen measured 3 feet 4 inches. Her main yard was 125 feet long and 2 feet 4 inches thick at the tye. She was a 4-mast ship called by the British a bark. The Yankees, however, coined the word shipentine for this class of vessel, which term is sometimes used at the present day.

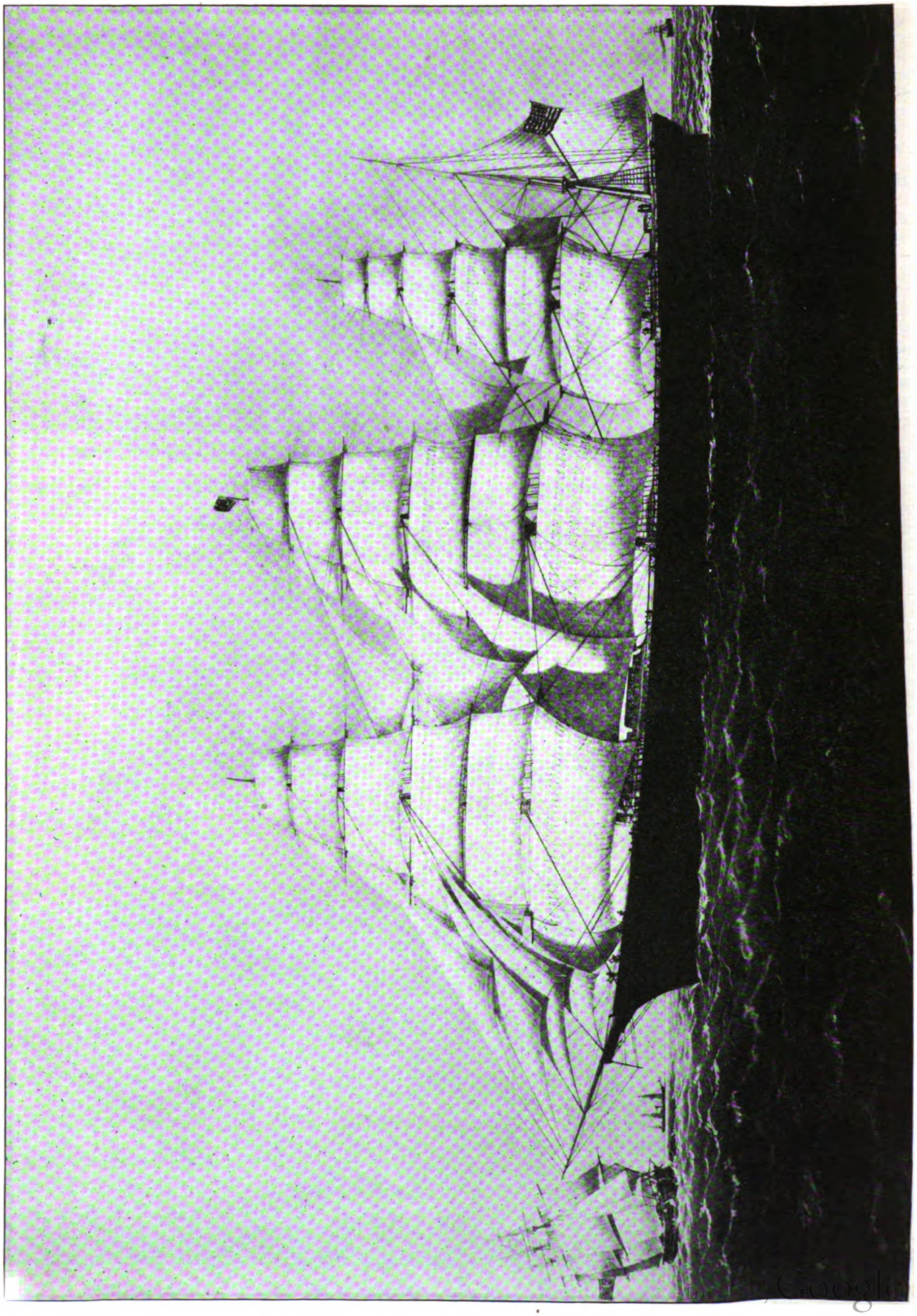
But the GREAT REPUBLIC was destined never to sail as originally built. While loading cargo at New York for her maiden voyage she caught fire and was badly damaged. She was rebuilt, but when she put to sea her carrying capacity had been reduced 1198 tons What she would have done under her original rig is a question of conjecture that has caused much speculation, both past and present. On her maiden voyage she crossed the Atlantic in 13 days and once made the



SIX-MAST SCHOONER WYOMING—THIS VESSEL HAS LOGGED 14 KNOTS WHEN LOADED LIGHT



SHIP REGINA VICTORIA—THIS CRAFT IS TYPICAL OF THE LATTER DAY FULL RIGGED SHIP AND CARRIES NO SKYSAILS



DONALD McKAY'S GREAT REPUBLIC—A 4-MAST BARK, SHE WAS IN MANY RESPECTS ONE OF THE MOST FAMOUS SHIPS EVER BUILT

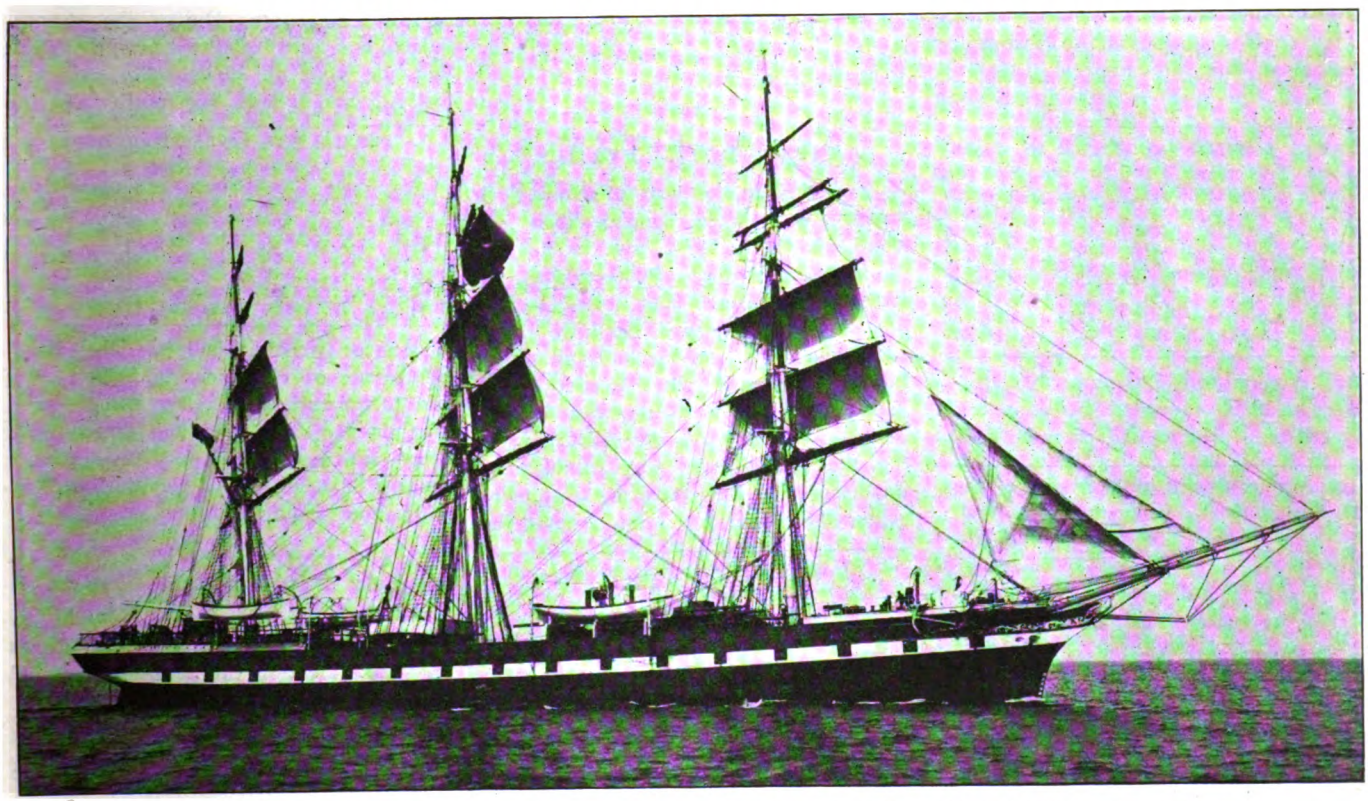
run from San Francisco to New York in 92 days. She was used as a troopship by the French during the Crimean war and by this country during the Civil war. Later she was bought by the British and renamed the DENMARK. She was lost in a hurricane, off Bermuda, in 1872. Donald McKay was a master shipbuilder and it is to be regretted that the GREAT REPUBLIC could not have sailed as he originally designed her. The unfortunate circumstance of her having taken fire and being practically destroyed, is said to have broken her designer's heart.

To return to the question: Why not build ships of this type today? Clipper ships, it must be borne in mind, sacrificed carrying capacity for speed. Again, they carried excessive crews, that is judged by present day standards. A vessel like the SOVEREIGN OF THE SEAS, as an illustration, carried a crew of over 50 seamen. Yards were braced, sails sheeted home and halyards manned all by brute strength. Occasionally, when the wind was fresh, it took the entire watch on deck to sheet home a main topsail. Today speed is sacrificed for carrying capacity.

Again, in the clipper ship days, navigators were a daredevil lot. They thought nothing of carrying full sail in half a gale of wind. Sail was never shortened until the lee scuppers were awash, the water standing thigh deep at the scuppers. If sails were blown away occasionally the loss was not great as cotton cost then well under 10 cents a pound. Wages were low, able seamen being paid $12 a month as against $100 today.

Clipper ships are not being built today because it is not an economical proposition to do so. While there is romance in running before a fresh gale at an 18-knot speed, romance does not pay dividends. Sailing vessels of the present day must have ample cargo carrying capacity, they must be manned in such a manner that the owners will have a reasonable assurance of their keeping afloat and the rigs must be adapted to being handled by a comparatively small crew. According to present day standards, approximately 25 men are sufficient to handle a 3000-ton square rigged sailing vessel.

(To be concluded)



FULL RIGGED RUSSIAN SHIP—THIS VESSEL HAS FINE LINES AND SHOULD MAKE GOOD TIME IN A FAIR WIND

Ships Free From Libel

The first Seattle application of the attorney general's ruling that shipping board vessels may not be libeled applied when seamen on the Great Lakes-built steamer LAKE FITCH attempted to hold the vessel for wages alleged due. When deputy marshalls made an effort to serve the papers they found that it could not be done and the claims will take their course in the U. S. courts.

Operation of Mallory line steamers out of Galveston was discontinued May 13, according to official announcement, and the ships routed to Port Arthur, where they can be loaded and unloaded under "open shop" conditions.

Antwerp to Expand

The Belgian government has under consideration a scheme for the reclamation of waste lands on the left bank of the Scheldt. The development of the port of Antwerp has been confined up to the present to the right bank of the river, which is about 600 yards wide in front of the city. Plans are being drawn for the construction of a whole town, with docks, shipyards and workshops, dependent on Antwerp, and under the municipality of Antwerp. To connect the two sides, a 3-track tunnel under the Scheldt will be built, having two railway lines and a thoroughfare for pedestrians and vehicles. The tunnel will start from the View Lions canal and pass under the river to a depth of 30 yards. Plans are expected to be ready in two months and the contract will be awarded immediately after. Foreign firms will be allowed to tender for the contract. The cost of constructing the tunnel is estimated at 75,000,000 francs.

Cornfoot & McIntosh, Portland, have been awarded the contract for the construction of the wooden 5-pontoon, 15,000-ton drydock authorized by the Port of Portland. The price is $761,345.

The concrete steamer SELMA, said to be the largest ship of her type afloat, grounded on the breakwater at Tampico, Mexico, May 21, but was later pulled off.

Marine Business Statistics Condensed

North Pacific Traffic

Based on the business of the first quarter, the net tonnage entering and clearing the state of Washington customs district during 1920 will equal if not exceed that of the previous record year, 1918, when the total reached 6,682,498 net tons.

SEATTLE PORT TRAFFIC 1920

Deep Sea Arrivals No. Ships	Net Tonnage	Month	Deep Sea Departures No. Ships	Net Tonnage
220	284,587	January	237	320,212
220	302,158	February	236	306,467
290	341,705	March	299	325,164
328	331,921	April	348	334,540

It is also significant, as shown by the accompanying figures, that the value of the business passing through the Washington customs district in March, 1920, exceeded in value that of either of the entire calendar years 1909, 1910 or 1911. While this seems a remarkable gain, it will not seem so phenomenal when the increase in the cost of all goods since the war is considered.

WATER COMMERCE AT SEATTLE BY YEARS

No. Ships	Net Tonnage	Year	No. Ships	Net Tonnage
1711	3,184,111	1911	1696	3,168,629
1913	3,558,640	1912	1901	3,542,010
2149	4,036,110	1913	2071	3,963,939
1927	3,893,104	1914	1892	3,765,358
2895	3,985,675	1915	2858	3,989,512
3174	3,685,635	1916	3217	3,743,757
3254	3,396,276	1917	3259	3,524,946
3151	4,008,314	1918	3141	4,192,785
3514	3,619,260	1919	3533	3,785,407

DOMESTIC COMMERCE OF SEATTLE BY YEARS

Year	Imports	Exports	Total
1912	$ 36,554,344	$38,000,316	$ 74,554,660
1913	38,382,283	39,392,788	78,315,071
1914	49,174,727	48,758,494	97,933,221
1915	77,971,684	56,974,456	134,146,140
1916	98,229,317	56,763,599	154,992,916
1917	109,097,093	69,543,458	178,640,151
1918	128,101,794	83,211,058	211,312,852
1919	124,261,720	80,068,572	204,330,292

While both Seattle and this customs district broke all previous commerce records in 1918, business dropped somewhat in 1919 as was expected. However, the volume of exports and imports is now maintaining its own. Seattle leads all Pacific coast ports and is the fifth port of the country both as to imports and exports according to ratings based on March, 1920, figures.

WASHINGTON CUSTOMS DISTRICT

1920	—Entrances— No.	Tonnage	—Clearances— No.	Tonnage
Jan.—American	61	87,385	196	128,962
Foreign	185	155,268	187	151,865
	346	242,653	383	280,827
Feb.—American	147	88,528	173	98,347
Foreign	183	188,174	176	168,526
	330	276,702	349	266,873
Mar.—American	185	118,794	174	107,134
Foreign	161	183,884	155	175,560
	346	302,678	329	282,694

New York Traffic

Clearances at the port of New York during May were smaller than the average for the first five months of the current year. Furthermore the shortage of cargoes and the difficulties of obtaining bunker, resulting from labor difficulties and the railroad strike, held a number of ships in port. The entrances during the month set a record for the year, conclusively proving that despite the port troubles the importance of New York as a shipping center has not yet been jeopardized.

NEW YORK PORT TRAFFIC 1920
(Exclusive of domestic)

Month	Entrances No. ships	Net tonnage	Clearances No. ships	Net tonnage
January	372	1,143,126	410	1,450,778
February	377	1,174,913	329	1,054,269
March	440	1,322,013	410	1,369,829
April	431	1,302,177	386	1,243,000
May	444	1,343,052	390	1,258,996

Inability of inland shippers to make deliveries at the seaboard, however, has resulted in serious congestion. The excess of entrances during May was 84,056 net tons. The excess of entrances during the previous month was 59,177 net tons. In five months of 1920, the port of New York records a total of 6,286,281 net tons of entrances and a total of 6,376,872 net tons of clearances. At this rate the traffic of the port for the calendar year will show a decided increase over the traffic recorded for 1919.

Philadelphia Traffic

Philadelphia recorded an appreciable increase in port traffic during May due largely to the overflow from New York. The longshoremen's strike did not begin to tie up shipping at Philadelphia until the last of May. During the month, about one-third of the tonnage entering the port of Philadelphia came in ballast, and about one-fourth of the clearances were in ballast. The large percentage of clearances in ballast was due to the rush of shipping men to send to Cuba for sugar. For this cargo small ships are used. The overseas tonnage using Philadelphia as a port during May was about one-half American.

PHILADELPHIA PORT TRAFFIC 1920
(Exclusive of domestic)

Month	Entrances No. ships	Net tonnage	Clearances No. ships	Net tonnage
January	59	139,941	67	199,396
February	67	184,753	72	230,766
March	91	223,082	65	171,724
April	88	205,694	89	237,730
May	116	284,315	119	338,366

Lake Michigan Receipts

Receipts of ore at Lake Michigan ports for May were 1,517,702 gross tons as shown in the following record by ports:

Port	Gross Tons
South Chicago, Ill.	894,038
East Jordan, Mich.	.....
Boyne City, Mich.	7,983
Milwaukee	.....
Indiana Harbor, Ind.	253,920
Gary, Ind.	361,761
Total	1,517,702

Lake Erie Receipts

Out of a total of 6,976,085 tons shipped from upper lake ports in May, Lake Erie ports received 4,150,442 tons, as shown by the figures compiled by MARINE REVIEW. The balance on dock June 1 was 6,312,575 against 5,944,994 tons on June 1, 1919. Detailed figures are:

Port	Gross Tons
Buffalo and Port Colborne	722,380
Erie	256,762
Conneaut	311,872
Ashtabula	1,072,076
Fairport	115,594
Cleveland	754,817
Lorain	381,926
Huron	143,715
Toledo	262,214
Detroit	129,086
Total	4,150,442

FOREIGN IMPORTS, EXPORTS AND TONNAGE
Passing Through Washington Customs District for 11 Years

Year	Imports	Exports	Total	Entered Tons	Cleared Tons	Total
1909	$ 26,959,891	$ 25,788,475	$ 52,748,366	1,920,167	2,068,524	3,988,691
1910	28,910,491	30,121,004	59,031,495	1,806,467	2,063,152	3,869,619
1911	36,654,675	39,361,303	76,015,987	2,105,599	2,272,562	4,378,161
1912	39,011,250	63,745,572	102,756,822	2,498,150	2,857,818	5,355,968
1913	51,473,683	62,548,109	114,021,792	2,887,322	3,058,504	5,943,826
1914	55,391,656	55,012,215	110,403,871	3,171,745	3,246,475	6,418,220
1915	68,446,576	67,887,784	135,354,351	2,920,622	3,046,123	5,966,745
1916	135,580,910	163,089,863	298,670,773	3,251,586	3,303,639	6,554,225
1917	290,098,276	196,837,722	486,935,998	3,100,497	3,164,750	6,265,247
1918	300,954,076	296,195,720	597,180,914	3,299,110	3,383,388	6,682,498
1919	195,918,779	292,274,345	488,193,124	2,793,879	2,839,244	5,633,123
BY MONTHS DURING 1920						
1920						
Jan.	29,964,055	15,883,758	45,847,813	242,653	280,827	523,480
Feb.	40,708,726	15,989,197	56,697,923	276,702	266,873	543,575
March	46,392,720	32,780,040	79,172,760	302,678	282,694	585,372

Marine Business Statistics Condensed

Soo Canal Report

Freight movement through the Soo canal in May, 1920, shows a decrease when compared with the same period in 1919. The figures are 8,421,210 net tons for 1920 and 10,566,326 net tons for 1919, a decrease of 2,145,116 net tons. The comparison of tonnage figures for the past seven years follows:

	Net tons
May, 1920	8,421,210
May, 1919	10,566,326
May, 1918	11,404,045
May, 1917	8,807,892
May, 1916	12,293,476
May, 1915	7,348,567
May, 1914	7,488,116

Of the total freight carried in May, 7,894,442 tons were handled through the United States canal while 526,768 tons passed through the Canadian canal.

The following tabulation gives the figures in detail for 1920 and 1919:

	To June 1, 1920	To June 1, 1919
Eastbound		
Lumber, M. ft. B. M.	15,020	31,405
Flour, barrels	658,910	910,524
Wheat, bushels	17,772,606	45,825,116
Grain, bushels	17,912,942	13,546,415
Copper, net tons	4,658	3,942
Iron ore, net tons	6,846,450	7,761,553
Pig iron, net tons		35
Stone, net tons	17,025	9,640
General merch., net tons	12,186	13,877
Passengers, number	523	602
Westbound		
Coal, soft, net tons	582,206	2,655,562
Coal, hard, net tons	212,000	391,127
Iron ore, net tons	22,064	11,665
Mfgd. iron and steel, net tons	14,774	28,508
Salt, net tons	11,190	22,854
Oil, net tons	53,046	90,958
Stone, net tons	54,820	15,266
Gen. merch., net tons	69,757	71,741
Passengers, number	614	609
Summary		
Vessel passages, number	2,543	3,360
Reg. tonnage, net	7,887,787	9,739,171
Freight—		
Eastbound, net tons	7,938,562	9,651,808
Westbound, net tons	1,019,857	3,287,681
Total freight, net tons	8,958,419	12,939,489

May Lake Levels

The United States lake survey reports the monthly mean stages of the Great Lakes for the month of May, 1920, as follows:

Lakes	Feet above mean sea level April	May
Superior	602.26	602.40
Michigan-Huron	580.54	580.75
St. Clair	574.80	575.24
Erie	571.64	572.31
Ontario	245.55	245.60

Lake Superior is 0.14 foot higher than last month, 0.20 foot higher than a year ago, 0.44 foot above the average stage of May of the last 10 years, 0.65 foot below the high stage of May, 1861, and 1.58 feet above the low stage of May, 1911.

Lakes Michigan-Huron are 0.21 foot higher than last month, 0.63 foot lower than a year ago, 0.17 foot above the average stage of May of the last 10 years, 2.77 feet below the high stage of May, 1866, and 1.19 feet above the low stage of May, 1896. During the last 10 years the May level has averaged 0.3 foot higher than the April level and 0.3 foot lower than the level in June.

Lake Erie is 0.67 foot higher than last month, 1.37 feet lower than a year ago, 0.42 foot below the average stage of May of the last 10 years, 2.11 feet below the high stage of May, 1862, and 1 foot above the low stage of May, 1901. During the last 10 years the May level has aver-

Trade Routes Covered in Panama Traffic

Commercial traffic through the Panama canal in April is classified in the following table according to trade routes:

No. ships	Registry	Tons cargo	Pacific to Atlantic From	To
20	Amer.	122,255	West coast	East coast
1	Jap.	7,450	South Amer.	United States
1	Nor.	8,094		
22		137,799		
12	Brit.	11,814	West coast	
3	Amer.	1,271	South Amer.	Cristobal
3	Chil.	3,654		
3	Peru	5,396		
21		22,135		
9	Brit.	37,036	West coast	
4	Ger.	23,527	South Amer.	Europe
1	Fren.	5,565		
1	Port.	6,775		
1	Ital.	1,500		
1	Dut.	4,800		
1	Chil.	2,736		
18		81,939		
12	Amer.	72,707	United States	coastwise
8	Brit.	44,349	Aust. and N. Z.	Europe
3	Amer.	19,444	Far East	East coast
2	Brit.	15,500		United States
2	Jap.	8,876		
7		43,820		
2	Amer.	Ballast	West coast	
2	Brit.	Ballast	South Amer.	Mexico
2	Nor.	Ballast		
6				
2	Amer.	14,342	Far East	Cuba
1	Jap.	5,362		
3		19,704		
2	Brit.	12,531	Aust. & N. Z.	East coast United States
1	Amer.	1,507	West coast	
1	Swed.	5,500	United States	Europe
2		7,007		
1	Amer.	7,336	S. Francisco	Alexandria, Egypt
1	Amer.	Ballast	West coast United States	Mexico
1	Amer.	Ballast	West coast Central Amer.	Mexico
1	Amer.	3,000	West coast South Amer.	Martinique
1	Amer.	375	West coast United States	Cuba
1	Amer.	1,540	S. Francisco	Cristobal
1	Amer.	2,535	West coast Central Amer.	Europe
1	Fren.	754	British Columbia	Europe
109		457,531		

No. ships	Registry	Tons cargo	Atlantic to Pacific From	To
27	Amer.	36,028	East coast	West coast
2	Brit.	6,004	United States	South Amer.
1	Jap.	7,203		
1	Nor.	3,463		
31		52,698		
11	Amer.	88,031	East coast	
5	Brit.	32,366	United States	Far East
4	Jap.	24,020		
20		144,417		
7	Brit.	3,758	Cristobal	West coast
3	Chil.	2,648		South Amer.
2	Peru	1,398		
1	Amer.	328		
13		8,132		
5	Brit.	18,416	Europe	West coast
2	Ger.	22		South Amer.
1	Fren.	Ballast		
1	Swed.	3,332		
1	Nor.	Ballast		
10		21,770		
7	Amer.	27,493	United States	Coastwise
3	Amer.	27,250	Mexico	West coast
2	Nor.	17,400		South Amer.
5		44,650		
4	Brit.	23,874	Europe	Aust. and N. Zealand
3	Amer.	23,500	East coast	Aust. and
2	Brit.	10,796	United States	N. Zealand
5		34,296		
1	Brit.	Ballast	Europe	West coast
1	Amer.	6,770		United States
2		6,770		
2	Amer.	2,071	Cristobal	West coast United States
2	Brit.	1,297	Cristobal	West coast Cent. Amer.
2	Brit.	Ballast	St. Lucia	Chile
1	Amer.	8,572	East coast United States	British Columbia
1	Amer.	8,072	East coast United States	Manila
1	Brit.	7,800	Europe	British Columbia
1	Brit.	700	Europe	West coast Cent. Amer.
1	Amer.	4,500	Mexico	West coast Cent. Amer.
1	Amer.	920	New Orleans	Panama
1	Amer.	Ballast	Cuba	West coast United States
110		398,032		

Marine Business Statistics Condensed

aged 0.3 foot higher than the April level, and 0.2 foot lower than the June level.

Lake Ontario is 0.05 foot higher than last month, 1.67 feet lower than a year ago, 1.10 feet below the average stage of May of the last 10 years, 3.35 feet below the high stage of May, 1870, and 0.64 foot above the low stage of May, 1872. During the last 10 years the May level has averaged 0.3 foot higher than the April level, and 0.2 foot lower than the June level.

Panama Canal Traffic

Whole cargoes handled through the Panama canal during April, with comparative summaries for March and February, follow:

ATLANTIC TO PACIFIC

	No. of Cargoes	Tons
Coal	13	68,126
Fuel oil	5	41,900
Case oil	4	24,191
Gasoline	1	7,534
Phosphate rock	1	3,820
Mixed and general	64	252,461
Total		398,032

PACIFIC TO ATLANTIC

	No. of Cargoes	Tons
Nitrate	24	146,035
Flour	8	50,296
Cold storage food products	4	24,127
Miscellaneous food products	2	14,600
Crude oil	2	18,658
Wheat	1	7,336
Rice	1	5,363
Peanuts	1	5,283
Lumber	2	4,312
Mixed and general	50	181,522
Total		457,531

SUMMARY FOR APRIL

Number of commercial vessels	220
Registered net tonnage of above	672,169
Total cargo handled (tons)	855,563
Vessels without cargo	37

SUMMARY FOR MARCH

Number of commercial vessels	235
Registered net tonnage of above	676,270
Total cargo handled (tons)	894,516
Vessels without cargo	42

SUMMARY FOR FEBRUARY

Number of commercial vessels	208
Registered net tonnage of above	579,842
Total cargo handled (tons)	701,799
Vessels without cargo	33

May Ore Shipments

Shipments of iron ore from the Lake Superior district last month were 6,976,085 tons, an increase of 360,744 tons over the same month last year. Detailed figures follow:

Port	May, 1920	To June 1, 1920
Escanaba	795,673	795,673
Marquette	375,036	375,036
Ashland	1,013,049	1,013,049
Superior	1,983,660	2,189,246
Duluth	1,662,971	1,688,239
Two Harbors	1,145,696	1,145,696
Total	6,976,085	7,206,939
1920 increase	360,744	
1920 decrease		820,641

New Ship Firms

Marine companies organized in May had an authorized capital of $31,983,000, the smallest total for any month this year and far below the huge amount recorded in April, when ship firms organized carried capital of $178,835,000. The number of firms organized in May, as shown by the compilation of the *Journal of Commerce*, total 32, equaling the high record set in January. In May, 1919, new marine firms were capitalized at $17,200,000.

The record of incorporations for May follows:

MAY, 1920

Arapahoe Navigation Co., Del.	$275,000
Bee Line Transportation Co., Del.	2,000,000
Baltic Steamship Corp., N. Y.	500,000
Cummins-McDonald Navigation Co.	50,000
Casco Bay Lines, Me.	75,000
F. A. S. Line, Inc., The, Del.	250,000
First National Steamship Co., Del.	600,000
Intercontinental Transportation Co., Del.	1,000,000
Luckenbach Terminals, Inc., N. J.	2,000,000
Muscoota Navigation Co., Del.	400,000
Mercantile Lines, Inc., Del.	500,000
Mount Shasta Steamship Co.	1,556,600
Neptune Shipping Corp., N. Y.	200,000
Nyanza Steamship Co., Ltd., Del.	1,000,000
Pacific Motorship Co., Del.	3,250,000
Paragon Navigation Corp., Del.	100,000
Pitt Navigation Co., Del.	51,000
Rhode Island Steamboat & Lightering Co., R. I.	100,000
Steamship & Shipyard Equipment Corp., Del.	100,000
Spindrift Shipping Corp., N. Y.	80,000
Tonawanda Navigation Co., Del.	275,000
Talbot Steamship Co., Del.	2,200,000
Unsinkable Boat Co., Del.	2,000,000
U. S. Mail Steamship Co., N. Y.	200,000
U. S. Ocean Services, Inc., N. Y.	1,000,000
Willsolo Steamship Co., Del.	2,200,000
Western Steamship Co., Del.	500,000
Westbrook Steamship Co., Del.	1,857,600
Willhilo Steamship Co., Del.	2,910,000
Willfero Steamship Co., Del.	1,000,000
Westlake Steamship Co., Del.	1,837,800
Yellowstone Steamship Co., Del.	2,225,000
Total	$31,983,000

U. S. Ship Sales Can Be Financed

(*Concluded from page 370.*)

aroused no objection. With respect to ocean vessels, however, the existence of this law has always been one of the chief obstacles to interesting capital in marine securities.

From the financial viewpoint another important provision is that exempting owners of American ships engaged in foreign trade for a period of 10 years from excess profits taxes, provided they invest out of earnings a sum, to be fixed by the treasury department, in shipbuilding or in shipyards in this country. Also during the 10-year period a citizen selling a ship built prior to 1914 would be exempt from income tax on the profits from the sale if he invested the entire proceeds in the building of new vessels placing the order in American yards.

Of great importance in connection with the sales is the price per ton to be fixed by the shipping board. Instructions to the board that it must consider replacement costs are regarded as a victory for the shipbuilding interests, who have been insistent upon that point. Some inkling of the value placed by the shipping board upon its first rate tonnage is found in the fact that under the new agency agreement the ships are carried on the books at $200 a ton. Under this plan, which gives the operator a share in the net profits, the operator is obliged in his operating expenses to figure in fixed charges of 23½ per cent including 10 per cent depreciation. If the results prove unprofitable, the shipping board holds itself ready to adjust the book value downward, and by this method it is hoped to ascertain whether or not the boats can be operated profitably at present rates on an original capital cost of $200 a deadweight ton. Shipping board officials estimate that at existing rates the steel cargo vessels should earn $36 a ton a year. The board now is holding its best ships for from $180 to $214 a deadweight ton, after figuring in a graduated scale of depreciation agreed upon in February, 1920, in order to stimulate sales. The present construction cost in American yards is estimated at about $165 to $175 a ton.

Financing the transfer of the war-built commercial fleet from government to private ownership is a problem which requires only proper management to insure certain solution. In the judgment of shipowners, shipbuilders and bankers congress has finally offered a working basis for the successful operation of American vessels. The shipping board has the opportunity to hasten the exchange of ownership and thus assure the permanent strength of American shipping.

As a result of a collision between the steamer LARAMIE and the Boston owned schooner, FLORENCE THURLOW, 75 miles off Sandy Hook, in May, the schooner had to be abandoned, the crew of 14 men being rescued by the LARAMIE. The schooner was owned by Lewis K. Thurlow, Boston, and was a 4-master of 946 tons, 191.6 feet long, 39.2 feet beam, 12.1 feet deep, built at Rockland, Me., in 1906.

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

Name of Vessel	Date	Nature	Place	Damage Resulting
Abbeville	May 19	Pumps	Dover	Not stated
Anne Lord	May 25	Sunk	West Indies	Total loss
Assiria	May 12	Struck Mine	Mediterranean	Total loss
Alston	May 20	Leaking	At sea	Not stated
Arthur H. Zwicker	May 17	Leaking	At sea	Heavy
Absaroka	May 9	Machinery	Bermuda	Slight
Amy G. McKean	May 11	Short Supplies	At sea	None
Alabat	May 17	Fire	Habana	Not serious
Askawake	May 30	Boiler	At sea	Not stated
Boreta	May 14	Fire	Gulf of Mexico	Not stated
Buyo Maru	May 21	Fire	At sea	None
Barryton	May 23	Grounded	Off Vineyard Haven	Not stated
Betterton	May 17	Fire	West Brighton	Slight
Bohemian	May 22	Grounded	Sambro Ledges	Heavy
Betsy Bell	May 22	Engine	At sea	Not stated
Butte	May 7	Collision	Gibraltar	Lost anchor and chain
Buenos Aires	May 6	Collision	At sea	Not stated
Brookhaven	May 9	Dam. rudder	At sea	Not stated
Boynton	May 2	Machinery	At sea	Not stated
Buckhannon	May 10	Repairs	Jacksonville	Not stated
Belair	May 17	Grounded	Off Rosario	Not stated
Byfield	May 5	Fire	At sea	Slight
Benoni	May 28	Grounded	Frying Pan Shoals	None
Burnside	June 1	Fire	Philadelphia	Slight
Clarks Mills	May 21	Grounded	Mobile Bay	Not stated
Cowrie	May 19	Explosion	Rotterdam	Partially destroyed
Calala	May 22	Fire	Tampa	Not stated
Cedar Springs	May 15	Broke propel.	At sea	Not stated
Coquelle	May 2	Repairs	San Francisco	Engine trouble
Charles Braley	May 13	Disabled	Mobile Bay	Engine trouble
Charles Davenport	May 18	Collision	Staten Island	None.
Cotati	May :	Mach. trouble	At sea	Slight
Cowanshannock	May 7	Repairs	St. Thomas	Ice mach. trouble
Chatauqua	May 25	Grounded	Northeast Reef	Not stated
Carmel	May 21	Repairs	San Francisco	Engine trouble
Casco	May 2	Leaking	At sea	Not stated
Conneaut	May 29	Collision	Off Port Arthur	Sunk
Defender	May 8	Grounded	Fiji Islands	Heavy
Dana	May 7	Leaky	At sea	Not stated
Dannedaike	May 8	Collision	New Orleans	Twisted stem
Dauperata	May 27	Lost Blade	At sea	Not stated
Daca	May 26	Fire	Aberdeen	Not stated
Deva	May 26	Cargo afire	Fayal	Serious
Emilie	May 23	Adrift	Off Vineyard Haven	Leaking
Frankinver	May 22	Mach. trouble	Falmouth	Not stated
Fresno	May 7	Disabled	At sea	Engine trouble
Fernwood	May 6	Mach. trouble	At sea	Not stated
Florence Thurlow	May 12	Collision	Off Seagirt	Sunk
Fort Logan	May 19	Repairs	Halifax	Pump trouble
Fred Baxter	May 21	Shifted deck load	Off Marrowstone Point	Capsized
Graciana	May 27	Grounded	Farne Islands	Heavy
Gen. O. H. Ernst	May 27	Collision	Off New Jersey	Damaged bow
Gulfoil	May 27	Collision	Off New Jersey	Heavy
Holden Evans	May 19	Struck wreck	New Orleans	Not stated
Hugoton	May 11	Disabled	At sea	Steerer damaged
Hilda	May 21	Broke steerer	Off Philadelphia	Grounded
Holliswood	May 16	Sunk	Off Cape San Blas	Total loss
Hoquiam	May 26	Struck shoal	Grays Harbor	Broke rudder
H. B. Morse	May 25	Boiler leaking	Pauillao	Serious
Ixion	May 7	Fire	Hongkong	Cargo damaged
Innerton	May 29	Repairs	Halifax	Machy. trouble
Johan Paulson	May 16	Boiler trouble	At sea	Not stated
John Adams	May 22	Grounded	South Pass	Not stated
Jean Campbell	May 22	Leaking	At sea	Serious
John M. Wood	May 21	Collision	Off Little Hope Island	Cut in two
Jeanette	May 14	Grounded	Vainquers Island	Total loss
John Peirce	May 11	Grounded	Off Key West	Slight
Jacksonville	May 18	Collision	Staten Island	Lost rigging
Kerowlee	May 12	Grounded	Weser River	Serious
Lake Delancey	May 21	Collision	Off Philadelphia	Damaged stem
Lake Singara	May 23	Grounded	Off Manzanillo	None
Lake Ypsilante	May 25	Disabled	At sea	Leaky boiler
Lake Ellerslie	May 17	Lost blade	At sea	Not stated
Lake Grafton	May 16	Grounded	Mount's Bay	Total loss
Lake Stobi	May 17	Grounded	Goto Islands	Total loss
Lake Fluvana	May 28	Dam. windlass	Off Reedy Island	Not stated
Lake Ferona	May 31	Dam. plates	At sea	Not stated
Luiza	May 6	Grounded	Off Fort Morgan	None
Laramie	May 12	Collision	Off Seagirt	None
Lafcomo	May 29	Collision	Off Port Arthur	Not stated
Liberty	May 23	Adrift	Off Vineyard Haven	Leaking
Mount Berwyn	May 22	Fire	Dover	Not stated
Monasses	May 15	Engine trouble	Off Bermuda	Not stated
Mindoro	May 25	Leaky	At sea	Not stated
Monarch	May 14	Grounded	Off Port Eads	Not stated
Minerva	May 11	Leaking	St. Johns	Not stated
Marg. F. Dick	May 8	Repairs	Halifax	Engine trouble
Melville	May 11	Collision	Gravesend	Bow damaged
Mulpua	May 11	Fire	At sea	Cargo damaged
Marg. Spencer	May 14	Leaking	At sea	Heavy
Mary F. Anderson	May 1	Launching	Halifax	Broke stern post
Meiko Maru	May 21	Mach. trouble	Off Astoria	Not stated
Moosehausic	May 28	Grounded	South Pass	Not stated
Manada	May 27	Condenser	Off St. John	Not stated
Northern Pacific	May 12	Grounded	San Juan	Not stated
Novian	May 6	Fire	Liverpool	Heavy
Nordanger	May 13	Missing	At sea	Not known
Norman Bridge	May 24	Disabled	Off Jacksonville	Machy. trouble
Noma	May 22	Boiler trouble	Off Honolulu	Not stated
Oceania Vance	May 25	Heavy weather	At sea	Waterlogged
Ossabaw	May 27	Fire	Off Quarantine	Cargo damaged
Pleiades	May 21	Collision	Off Philadelphia	Damaged stern
Pochasset	May 17	Distress	Off Spencers Island	Leaking
Pennsylvania	May 22	Grounded	Marcus Hook	None
Paraiso	May 1	Mach. trouble	At sea	Not stated
Progress	May 19	Grounded	Bug Light	Not stated
Perry Setzer	May 25	Fire	Marseilles	Slight
Powhatan	June 1	Fire	New York	Slight
President	May 22	Broke tail shaft	Seattle	Not stated
Ralph S. Parsons	May 24	Damaged sails	Barbados	Not stated
Rosamond	May 1?	Heavy weath.	At sea	Lost deckload
Royalite	May 17	Engine trouble	Halifax	Not stated
Rhine	May 10	Fire	East Boston	Cargo damaged
Selma	May 22	Grounded	Tampico	Not stated
Success	May 17	Leaking	Gulf of Mexico	Not stated
Santa Clara	May 20	Collision	Madras	Slight
Storeground	May 20	Heavy weath.	At sea	Dismasted
Samuel Courtney	May 1?	Fire	At sea	Total loss
San Ramon	May 8	Collision	New Orleans	Heavy
Sarah Weems	May 1?	Repairs	Jacksonville	Broke crankshaft
St. Croix	May 1?	Leaking	Musquash	Not stated
Seminole	May 24	Boiler trouble	Gibraltar	Not stated
San Guiseppe	June 1	Fire	Genoa	Not stated
Tongrier	May 22	Mach. trouble	Falmouth	Not stated
Trojan Prince	May 18	Out of control	Off Quarantine	Not stated
Terra Nova	May 12	Leaking	At sea	Heavy
Trinidadian	May 16	Collision	Off Egmont	Slight
Tacoma	May 1?	Grounded	Formosa	None
Tynemede	May 13	Repairs	London	Slight
Tafna	May 27	Grounded	Trinidad, Cuba	None
Ucayali	May 25	Fire	Quayaquil	Mail destroyed
Vaughn	May 16	Collision	Off Egmont	Damaged bow
Wachusett	May 18	Boiler trouble	Rotterdam	Not stated
Westgrove	May 24	Steerer disabled	New York	Not serious
West Totant	May 24	Mach. trouble	At sea	Not stated
Wascana	May 10	Disabled	Off Gibraltar	Broken shaft
W. C. Teagle	May 23	Grounded	South Pass	Not stated
West Tacook	May 1?	Heavy weath.	At sea	Lost anchor
Wigo	May 7	Collision	Gibraltar	Badly damaged
Windrush	May 9	Collision	At sea	Sunk
West Hematite	May ?	Fire	At sea	Cargo damaged
Waimate	May 14	Leaking	Dunedin	Not known
Willimantic	May 12	Repairs	Norfolk	Engine trouble
Wakan	May 16	Boiler trouble	Bahia	Not stated
Winyah	May 30	Boiler trouble	At sea	Not stated
West Chatala	June	Coal afire.	Suez	Dicharged cargo
Yukon	May 8	Repairs	Halifax	Not stated

Practical Navigation Guide-III

Explanation of Method of Determining Longitude by Chronometer With Illustrative Example Worked Out In Detail

BY V. G. IDEN

FOR the purposes of navigation, the measure of the circumference around the earth is divided into 360 degrees, the sun making this circuit every 24 hours. During every hour, the sun traverses 15 degrees. Therefore, a minute of time is equal to 15 minutes and a second is equal to 15 seconds by measurement of longitude. The finding of the longitude, it naturally follows, is a matter of reckoning the time at the ship and comparing this with the Greenwich time. Navigators accept the prime meridian of Greenwich as the measure from which all longitudes are reckoned.

From the chronometer we get the time in days, hours, minutes and seconds. On board the better class of ships it is customary to carry two or three chronometers and by comparing one with the other any possible error in the time can be detected. This chronometer correction must be added to or subtracted from the chronometer time, as the case may be, which will give the Greenwich mean time. But to the mean time, it is necessary to apply the equation of time, which is given for each day of the year in the *Nautical Almanac* and indicated whether of minus or positive quantity. The equation of time added or subtracted as the case may be, from the Greenwich mean time will give the Greenwich apparent time. The Greenwich apparent time (G.A.T.) is the measure which must be determined accurately first of all. In Fig. 7, the longitude of Greenwich is represented by *OP* and the progress of the sun westward of this is shown by *S*. To simplify the illustration, *S* is placed upon the surface of the earth on the longitude over which it directly shines, which is the meridinal longitude of the sun at the particular instant when it is sought to measure the longitude in which the ship is. Greenwich apparent time, therefore, would be the distance *S'O'*. The next measure desired is the polar distance, represented by the distance from *S* to *P*.

From the *Nautical Almanac* is taken the apparent declination of the sun on the date upon which the reckoning is being made, figuring the variation per hour as a correction. This will give the declination of the sun at the ship. Subtracting this amount from 90 degrees the polar distance, *S P*, will be found. In reckoning this polar distance, however, it must be remembered that when the latitude already obtained by dead reckoning and the declination given in the *Nautical Almanac* are both north or south, the declination is subtracted from 90 degrees in order to obtain the polar distance. When the latitude and the declination are of opposite designation, i.e., one south and the other north, the declination is added to 90 degrees in order to obtain the polar distance.

With the use of the sextant an observation is taken for the apparent-altitude of the sun. Then the true altitude is obtained in the same way in which it was worked out for latitude. This is done by taking into account the indicated error of the sextant and the height of the eye of the observer. Already latitude by dead reckoning will have been obtained.

The problem is now worked out by logarithms of trigonometric functions. In the epitome a table of these will be found. From this table we take the secant of (1) the latitude, the cosecant of (2) the polar distance, the cosine of (3) one-half the sum of the true altitude, the latitude and polar distance added, and the sine of (4) the difference between the true altitude and the third measure. Adding this secant, cosecant, cosine and sine, we are given a logarithmic haversine. By referring to the table in the epitome giving the logarithmic and natural haversines, the total obtained may be translated into hours, minutes and seconds. This will be the local apparent time at the ship, which is represented by the distance *SH*.

Already we have found the Greenwich apparent time *S'O'*. The calculation just made gives the local apparent time, *SH*. By subtracting the one from the other, the distance of the ship from the meridinal of Greenwich, or the longitude of the ship is obtained. This is represented by *H'O*. To illustrate the application of this principle we will assume that a ship on June 4, 1919, p. m., was in latitude 40 degrees 20 minutes by dead reckoning. The chronometer time was 6h. 38m. 41s. The chronometer correction was 6m. 21s. (slow). The observed altitude of the sun was 33 degrees 51 minutes 10 seconds. The indicated error of the sextant was plus 1 minute 20 seconds, and the height of the eye of the observer was 20 feet. We wish the longitude in at the time of the observation. The calculation is carried out in Table V. Chronometer time begins with noon, and noon by chronometer is 0 hours. From midnight to noon is the last half of the day and from noon to midnight is the first half of the day. Therefore, it follows that if the chro-

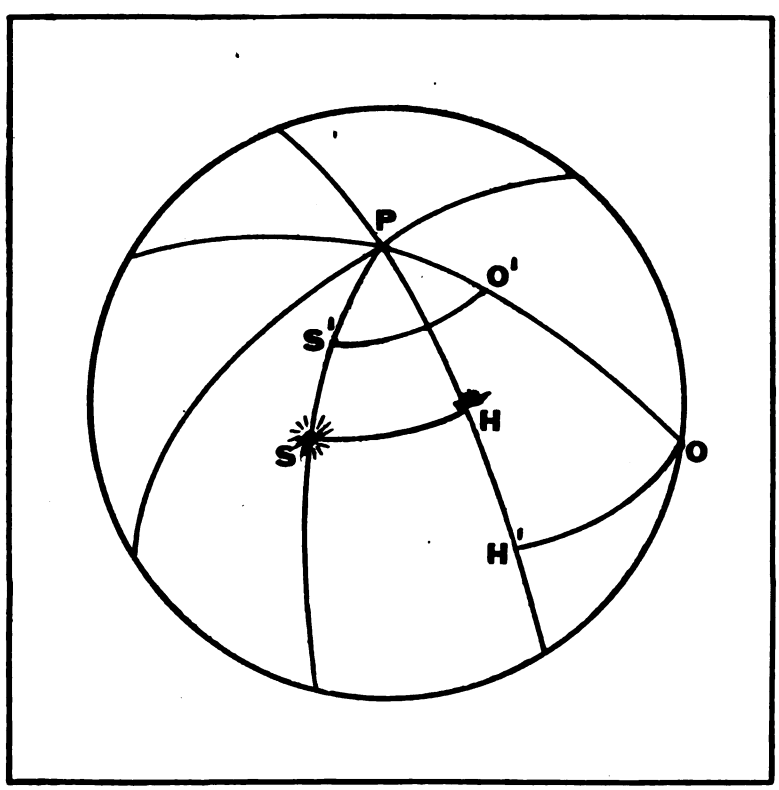


FIG. 7—DETERMINING LONGITUDE BY CHRONOMETER

nometer time is a. m., it means that it is that many hours past the second half of the previous date. If the chronometer time is p. m., the chronometer time will be an accurate record of the number of hours in the new day. Had this sight recorded in the example worked out, been taken when the chronometer gave an a. m. reading of 6 hours, 38 minutes and 41 seconds, it would have been that many hours of the previous date, June 3 instead of June 4, and the chronometer time would have read: 3d. 6h. 38m. 41s. Since it was a p. m. sight, the date stood.

Further along in the example, the correction in observed altitude for the height of the eye was made with the use of Bowditch Table 46, which gives the correction to be applied to the observed altitude of the sun's lower limb. When this table is used it is not necessary to take into consideration the semi-diameter of the sun, the refraction or the parallax as all three are taken into account in the table in calculating the height of eye correction. Be sure not to overlook the additional correction for sun's altitude noted in the smaller table at the foot of Table 46.

Care should also be exercised in using Bowditch Table 45. This table gives one hour reading at the top of the table of logarithmic haversines and another at the bottom of the table. The hour reading, or hour angle, at the top of the table is used when the observation was taken when it was p. m. at the ship. The hour angle is taken from the bottom of the table when the observation was taken when it was a. m. at the ship. When the hour angle is taken from the bottom of the table for the a. m. observation, it is necessary to drop a day from the date. This is done for the same reason that a day was dropped when the chronometer time was a. m.

A final rule, as so often expressed by navigators, is:

Greenwich time best, longitude west;
Greenwich time least, longitude east.

This means that when the local apparent time (L.A.T.) is greater than the Greenwich apparent time (G.A.T.), the ship's position is, very naturally, east of the prime meridian of Greenwich. When L.A.T. is less than G.A.T., the ship's position is west.

(To be continued)

The Pacific Steamship Co., Portland, Oreg., will be local agent for the New England Maritime Corp. operating a line of steamships between Boston and Pacific coast ports, it is announced by Frank J. O'Connor, agent of the Admiral line. The steamer ARTIGAS, launched at the Hog Island yard, March 25, was the first vessel in the new service.

Sells Wooden Hulls

Two unfinished wooden hulls at the plant of the Anacortes Shipbuilding Co., Port Townsend, Wash., were recently sold for $250 each. They were bought by R. B. Lomman, a cannery operator who will break them up and salvage the lumber. The hulls are the last of an order for six from the United States shipping board. Four of the vessels were completed.

Various shipbuilding yards in Maine enjoy an excellent business outlook for the coming season but in some other eastern states a general falling off of business is reported, when compared with the past two years. A number of eastern yards have shut down completely among them being that of Pendleton & Co., Mystic, Conn. The yard closed late in February for an indefinite period.

Portuguese ports were connected with New Orleans by sailing ship service when the big 4-mast schooner VENTUROSO, owned by Esteve Bros., with general cargo entered the Louisiana port recently. She cleared almost immediately with a full cargo of oak staves for Portuguese ports. Two other schooners of similar size, taken from the Mediterranean service, are to be put into the New Orleans trade at once.

Gas Association Meets

The Gas Products' association will hold its summer convention at Mackinac island, June 21-22. The members will leave Chicago by steamer, cruising northward through Lake Michigan and spending two days at Mackinac. The association is composed of manufacturers of electrolytic oxygen and hydrogen.

Canadian government merchant vessels, according to a recent government report, range in tonnage from 3750 to 10,500 tons and are being completely built, outfitted and manned in Canada. The cost of construction ranges from $180 to $215 per deadweight ton. Only freight carriers have been constructed so far but passenger ships up to 15,000 tons are being considered.

Table V

Method of Determining Longitude

Chronometer Time 4d. 6h. 38m. 41s.
Chronometer Correction 6m. 21s.

4d. 6h. 45m. 02s.
Equation of time 2m. 00s.

Equation of time by Nautical Almanac for June 4, 1919, was 2 min. 03 sec., with an hourly variation of 0.412 sec. minus. For 6.7 hours this gives a minus correction of 2.7 sec. Wherefore the correct equation of time is 2 min. 00 sec. plus.

4d. 6h. 47m. 02s., which is the G. A. T.

The declination of the sun on June 4 was 22 deg. 20 min. 33.7 sec. N.
Correction 2 min. 02 sec.

22 deg. 22 min. 36 sec. N.

But there was an hourly variation of 18.26 sec. for 6.7 hours, which gives a correction to be made of 2 min. 02 sec. plus.

(Note:—The latitude and declination are both north, therefore, the declination is subtracted from 90 degrees.)

90 deg. 00 min. 00 sec.
22 deg. 22 min. 36 sec.

67 deg. 37 min. 24 sec. which is the polar distance.

Observed altitude 33 deg. 51 min. 10 sec.
Indicated error 1 min. 20 sec. +

33 deg. 52 min. 30 sec.
Height of eye 10 min. 06 sec. + (Bowditch, Table 46)

True altitude 34 deg. 02 min. 36 sec.

Latitude 40 deg. 20 min. 00 sec. ....Secant 0.11788
Polar distance 67 deg. 37 min. 24 sec. ....Cosecant 0.03402

142 deg. 00 min. 00 sec. =
2

½ sum 71 deg. 00 min. 00 sec. ....Cosine 9.51264
34 deg. 02 min. 36 sec.

Remainder 36 deg. 57 min. 24 sec. ....Sine 9.77896

Bowditch, Table 44

9.44350, which equals A

(Bowditch, Table 45)—4d. 4h. 14m. 23s. Local apparent time.

Greenwich Apparent Time 4d. 6h. 47m. 02s.
Local Apparent Time 4d. 4h. 14m. 23s.

2h. 32m. 39s. W (Bowditch, Table 7)—38 deg. 09 min. 45 sec. W, Longitude in.

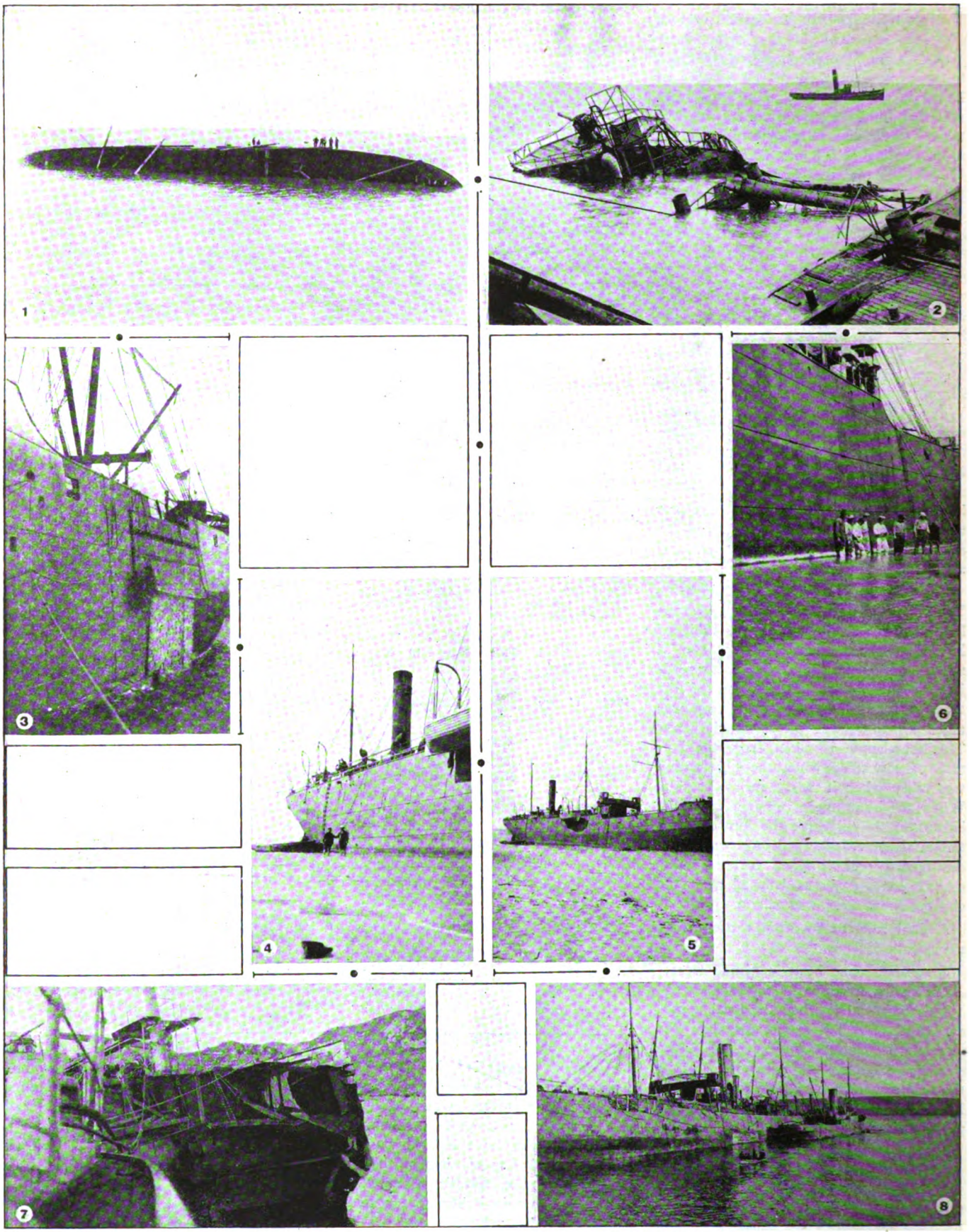


FIG. 1—VIEW OF AMERICAN LAKE-BUILT STEAMER LAKE ERIE SUNK IN COLLISION IN EUROPEAN WATERS NEAR PENARTH IN 1919 AND REFLOATED IN THE FOLLOWING JULY. VESSEL IS SHOWN LYING ON HER SIDE AT LOW WATER. FIG. 2—ANOTHER VIEW OF LAKE ERIE DURING SALVAGE OPERATIONS. FIG. 3—A TEMPORARY PATCH ON PORT SIDE OF SALVED STEAMER QUEENSLAND. FIG. 4—VIEW OF THE STRANDED RUSSIAN STEAMER LOUTSCH WHICH WAS SUCCESSFULLY SALVED. FIG. 5—THE LOUTSCH BEACHED AT THE MOUTH OF THE BOSPHORUS. FIG. 6—STARBOARD SIDE OF RUSSIAN STEAMER LOUTSCH ASHORE NEAR THE BOSPHORUS. FIG. 7—THE WRECK OF THE OIL TANKER OILFIELD. THIS VESSEL HAD HER BOW BLOWN OFF BY A TORPEDO. THE AFTER PORTION WAS SALVED BY THE OCEAN SALVAGE COMPANY'S STEAMER LA NINA AND TOWED INTO THE CLYDE. FIG. 8—THE SALVED STEAMER NORRINGTON SHOWING TEMPORARY PATCH ON PORT SIDE AND SALVAGE STEAMER WORKING ALONGSIDE

British Salvage Work Prospers

Adequate Equipment is Now Available—Profits Confined Generally to the Strong Well Trained Organizations—Experience Necessary

BY CUTHBERT MAUGHAN
Shipping Editor, "The Times", London

RATHER curiously, Great Britain, although possessing a huge mercantile marine, was not well supplied with salvage facilities down to the outbreak of the war. In antebellum days, the salvage operations of Great Britain were under the direction of the marine insurance interests. Among the agencies which they employed was a salvage association which had headquarters in London. This organization was and still is controlled by a committee of marine underwriters. Even at present this body usually acts on behalf of all the underwriters concerned, whether members of Lloyd's or marine insurance companies, when marine casualties occur in which the London marine insurance interests are financially concerned.

A central organization is maintained where a number of expert surveyors are employed, who can be dispatched to wrecks without delay. These experts survey the wrecks, make estimates of the probable cost of salvage, if salvage operations are justified, and report to the underwriters concerned, who are thereby in a position to make prompt and reliable decisions. When wrecks occur in far distant quarters of the world, the services of Lloyd's agents are usually employed. Before the war, the London Salvage association was headed by Sir Joseph Lowrey, a man who devoted the greater part of his life to the work of salvage. This body has no shareholders. It is maintained simply in the interests of the insurance underwriters.

There is a similar organization at Liverpool, although in some directions its operations are more extensive than those of the London Salvage association. It goes by the formidable title of "The Liverpool Association for the Protection of Commercial Interests as Respects Wrecked and Damaged Property." This association was established in 1857 and incorporated in 1881. As its title represents too much of a mouthful for busy modern times it is commonly known as the Liverpool Salvage association. It resembles the London Salvage association in that it has no shareholders but differs from the London organization because it owns some quite efficient salvage craft. Its principal salvage vessel, RANGER, is probably one of the most famous salvage vessels in the world. Long before the war this ship was responsible for saving many valuable steamers.

The RANGER was built by J. Elder & Co., at Glasgow, Scotland, in 1880. She is of 409 gross tons register. Her length is 157 feet, 5 inches, her beam 29 feet, 5 inches and her depth 14 feet, 4 inches. She has an ordinary portable pumping capacity of 2550 tons of water per hour. The RANGER is stationed at Holyhead near Liverpool on the west coast of England and sufficient steam pressure is constantly maintained for 8 knots, at 30 minutes notice in fine weather, and for 12 to 14 knots at 10 minutes notice in fogs and bad weather. The RANGER is fully equipped with a varied assortment of salvage gear, including air compressors, submarine pneumatic tools, heavy mooring cables and anchors, 50-ton purchases, a powerful towing gear and line-throwing guns. She carries a crew of skilled workmen, carpenters, divers and a specially trained staff of wrecking experts.

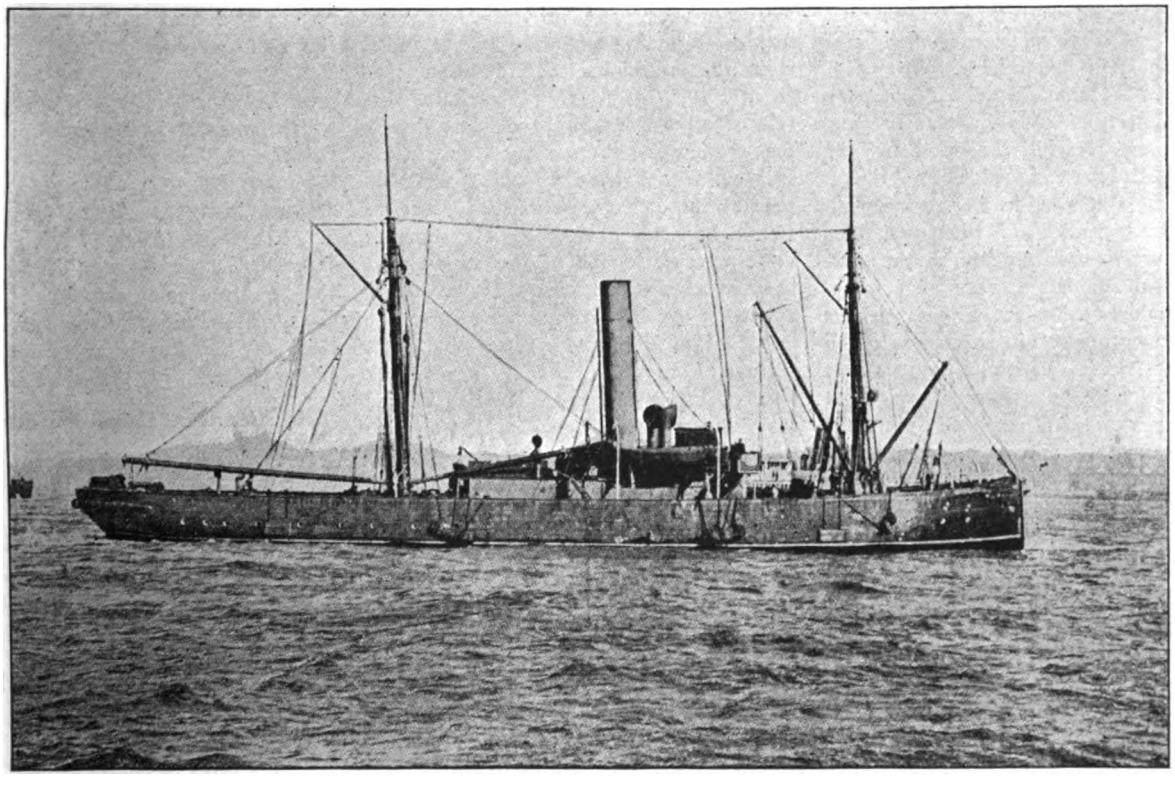


FIG. 9—THE RANGER—ONE OF THE MOST FAMOUS SALVAGE STEAMERS IN EUROPEAN WATERS
She is stationed at Holyhead near Liverpool and is constantly in commission ready to take the sea on 10 minutes' notice in bad weather

The RANGER is, of course, by no means the only salvage vessel in British waters. Some years before the war, the managers of the Liverpool Salvage association, recognizing that the salvage facilities of the south coast of England were inadequate, acquired the salvage steamer LINNET, which was stationed at Southampton. This vessel is of 426 gross tons and strange enough was also built in the year 1880. She is 165 feet long, with a beam of 29 feet and a depth of 13 feet. She is also kept ready to proceed immediately to any vessel requiring assistance at sea. She carries a crew equal to that maintained on the RANGER and is fitted with powerful salvage equipment. Her total pumping capacity is 2340 tons of water per hour. Both the RANGER and the LINNET represent splendidly equipped floating workshops designed for salvage operations. At present the chief surveyor of the Liverpool Salvage association is Commodore F. W. Young, with Frederick H. Lowe acting as secretary and general manager.

Before the war when vessels were wrecked and either the RANGER or the LINNETT were available, British underwriters were glad to enlist their aid. There were also one or two other British salvage companies available at that time, such as Thomas Ensor & Sons, Queenstown, Ireland, who owned two steamers, and the Cornish Salvage Co., Cardiff, Wales.

In the days before the war, however, the British ships could by no means deal with all of the losses which came within view of the British underwriters. Consequently it frequently happened that underwriters were glad to employ the salvage ships of the Svitzer company of Copenhagen, Denmark. This company owned a fleet of salvage steamers, the most famous of which are probably the PROTECTOR and the VALKYRIEN. These ships used to be stationed in important positions in trade routes and when casualties occurred were often quickly on the spot. German salvage boats were also sometimes employed; in fact foreign vessels were frequently used in salvage work in connection with British ships. Great Britain, it will be gathered, was not adequately provided with a powerful salvage plant. In the same way, some of the most powerful tugs in Europe were owned on the continent. When heavy tows, such as floating drydocks, had to be transferred long distances, Dutch tugs were frequently summoned.

Submarines vs. Salvage

On the outbreak of the war, salvage work leaped into prominence. Toward the end of 1914, the British admiralty took over from the Liverpool Salvage association practically all of its salvage plant and personnel, including the steamers RANGER and LINNET. An admiralty salvage section was formed with Commodore Young of the Liverpool Salvage association in charge. It was at first the intention of the navy that this salvage section should work mainly on the recovery of wrecked warships. But the development of the submarine warfare soon made it apparent that the salvage section would have to deal with a very large number of sunken merchant ships. The organization accordingly was greatly extended. It is known to have done good work during the war and is credited with having salved some 460 vessels representing a value of approximately $250,000,000. An account of the work done by the admiralty salvage section during the war would easily fill a large volume.

Private Firms Now Active

After the armistice this salvage section was transferred with other departments from the admiralty to the ministry of shipping. In reply to a question in the house of commons on April 13, Colonel Wilson, parliamentary secretary to the ministry of shipping, stated that since the armistice 34 ships had been salved, representing 125,226 gross tons. The organization, however, has now been dispersed and most of the salvage plant which was requisitioned has been returned to its owners.

Recently a number of new salvage companies have been formed in England. Perhaps some of their activities are due to the prominence which has been given to the fact that 2479 British merchant vessels representing 7,759,000 tons were sunk during the war, coupled with the additional consideration that about 15,000,000 tons of merchant vessels of all nationalities were lost during the same period from war or marine causes. It has been argued from facts such as these that a satisfactory revenue should be derived from salving some of these wrecks. Some of the stronger of the companies so formed have undoubtedly an opportunity to realize the hopes of their promoters.

One of the chief of these concerns now operating under the British flag is the Salvage & Towage Co., Ltd., which was organized in November, 1919. It has a capital of £1,250,000 in £1 shares, of which 640,000 shares were sold to the public in November. To commence its operations, this company acquired the whole of the share capital of the Ocean Salvage Co., Ltd., which had been incorporated in May, 1917. This latter enterprise had an authorized capital of £100,000, and its assets included three salvage steamers, two strong tugs fitted with pumps and salvage gear and a quantity of salvage plant acquired from the British admiralty. The ships of the Ocean Salvage Co., were under government control for two years until the spring of 1919. These ships have salved or taken part in salving 25 vessels including the armored cruiser KING ALFRED in Belfast Lough, and the famous steamship RIVER CLYDE, which was beached for the immortal landing at Gallipoli.

In addition, the Salvage & Towage Co., Ltd., has acquired control of Vickers Pontoons, Ltd., the equipment of which is understood to have been successful in salvage work. J. Wilson Potter, a prominent British ship owner, who is interested specially in the Australian trade, is chairman of the Salvage & Towage Co. Among the directors on a rather distinguished board are Sir Thomas George Owen-Thurston, K.B.E., a director of Vickers, Ltd., and Vice Admiral Sir Charles Lionel Vaughan-Leigh, K.B.E., C. B., who distinguished himself in dockyard management during the war. After the armistice this company acquired the services of Commander Borisso as general manager and agent. He was chief salvage officer for the British admiralty for the Mediterranean during the war.

Up to date, the Salvage & Towage Co., has concentrated on work in the Mediterranean and it forms an important addition to the salvage institutions of the United Kingdom. It owns the salvage steamers LA NINA, LA VALETTE, KING LEAR, CLEOPATRA III, and CAESAR II, together with the tugs FOREMOST, FRANK DIXON and HELLESPONT. The value of the two salvage steamers LA NINA and LAVALETTE was fixed by Lloyd's surveyor at Constantinople at $600,000.

Since April, 1919, wrecked vessels which have received assistance from the Salvage & Towage Co., include the following: HOSPITAL PADDLER V, ESQUIMAULT, TREVORIAN, RIVER CLYDE, H. M. S. TRYPHON, WAR PIKE, LOUTSCH, JUPITER, GREGOR, ATENE, TIRI-MUJGHIAN, FUKUI MARU and the French gunboat GRES. Illustrations of the salvage operations of the Russian steamer LOUTSCH are presented with this article.

American Ships Purchased

Another new salvage company recently formed in Great Britain is the Maritime Salvors Ltd. This company was organized in March of this year with a capital of £500,000, in £1 shares, of which 400,000 have now been issued. It includes among its directors W. J. Noble, president of the Chamber of Shipping in the United Kingdom, and chairman of the north of England shipping firm of Cairns, Noble & Co., Ltd., Newcastle. The managing director of the Maritime Salvors, Ltd., is Capt. W. J. Richards, previously one of the

surveyors of the Liverpool Salvage association. Captain Richards is credited with 26 years' experience in salvage operations and with having rescued a large number of ships.

This company has acquired the salvage steamers RELIANT and RESTORER, each of which has a gross tonnage of 1104 and a speed of 12 knots. They are said to be fully equipped with a modern plant. These vessels belonged originally to the New York & Baltimore Transportation line, and were known respectively as the MANNA HATA and CHESAPEAKE. They were fitted out by the United States navy during the war for salvage work and were purchased from the American government by their present owners. They are said to be among the most completely equipped salvage steamers in the world. Each vessel now has a complete outfit of salvage and towing gear, including 23 salvage pumps, electric submersible pumps, arc welding plant, oxy-acetylene cutting plant, air compressors, hydraulic jacks, etc. This company also owns the HOTSPUR, a twin-screw tug of 1000 horsepower with a pumping capacity of 2000 tons per hour; together with the 1000-horsepower, twin-screw tug ALLIGATOR and various small craft including a small cargo vessel of 120 tons suitable for making surveys, diving and other work.

Another prominent British salvage company which has been formed since the war is the All Seas Marine & Salvage Company, Ltd., headed by Maj. D. Young, a son of Commodore Young of the Liverpool Salvage association. So far this company has concentrated largely on operations in the Baltic sea. One of its principal feats was the wrecking of the 5300-ton steamer ULIDIA which stranded on the rocks at Saroka in the White sea. An expedition to wreck the vessel was organized by Major Young and the ULIDIA was refloated, towed to Archangel and later brought to the Tyne, which she reached last October. The company was awarded $80,000 for this job. This company has also salved the American, Great Lakes-built steamer LAKE ERIE which stranded in January, 1919, near Penarth, in Cardiff Roads. She was refloated in July, 1919. Some of the accompanying illustrations show the LAKE ERIE lying on her side with the salvage steamer ELLIDA alongside at high water. Another view shows the LAKE ERIE in a comparatively upright position with her after gun visible.

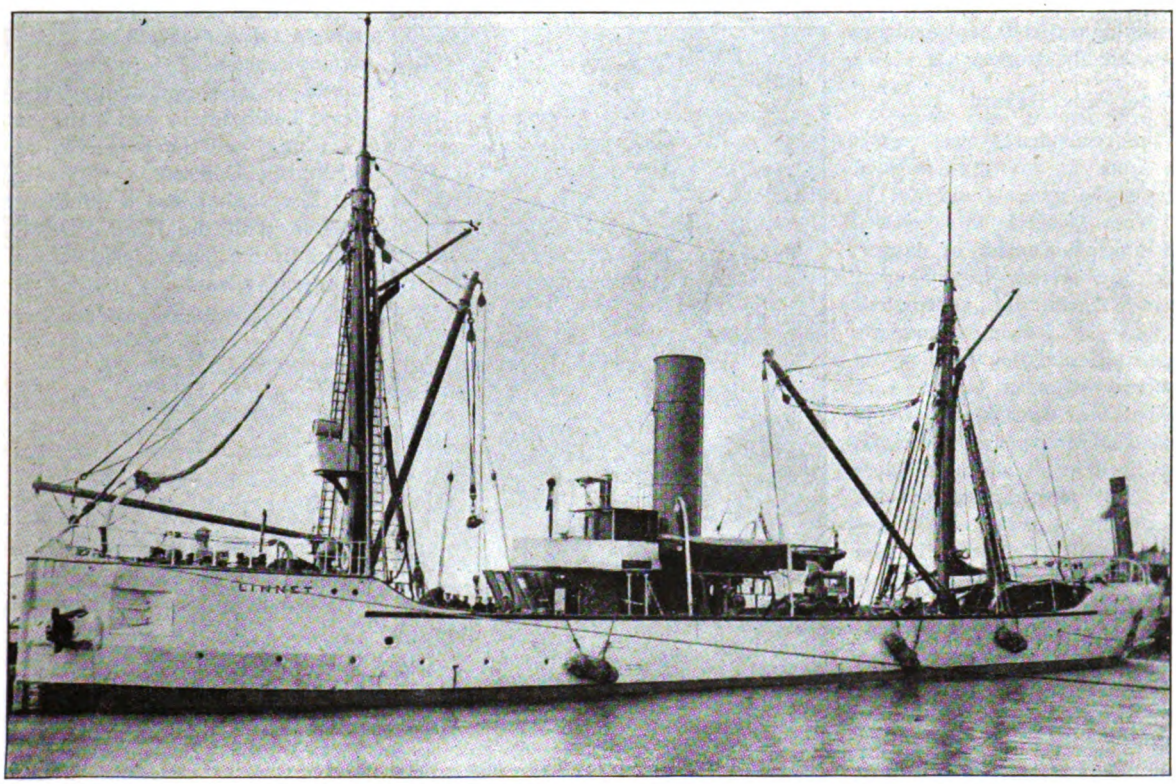


FIG. 10—THE LINNETT—ANOTHER FAMOUS BRITISH SALVAGE STEAMER

Bought American Wreck

On May 18, the All Seas company purchased at an auction held at the Baltic exchange, London, the wreck of the new American steamer ROCK ISLAND BRIDGE which had been beached, holed amidships in a collision, off Polkerris Point near Falmouth, on the south coast of Cornwall. The All Seas company paid $61,000 for the wreck. At the time of the accident, the ROCK ISLAND BRIDGE was outward bound from Antwerp and was beached 400 yards from the shore in nine fathoms of water. She also capsized. At the present time she lies on her side with parts just showing at low water. This steamer is one of the standard vessels of 5350 deadweight tons fabricated by the Submarine Boat Corp, Newark, N. J., and she was sold at auction on the Baltic exchange by order of the United States shipping board. Messrs. Kellocks, the auctioneers, publicly stated at the sale that before the accident the vessel was worth nearly $1,000,000. The salvors believe that the problem of raising the ROCK ISLAND BRIDGE is somewhat similar to that of the LAKE ERIE which they successfully salved last year. If they succeed in this case, their reward should be a handsome one. If raised, the vessel will be taken to Falmouth nearby where there are good repair facilities. Much depends on the weather for the success of the operation.

Another company which has recently been formed is the Bristol Channel Towage, Salvage & Lighterage Co., Ltd. This concern has a capital of £250,000 in £1 shares. The company has nine tugs available. In February of this year news was received that a steamer of about 3000 tons had been abandoned by its crew off Lundy island. Bad weather was encountered at that time, but eventually the steamer was towed into a South Wales port by one of the tugs of the Bristol Channel company, working in conjunction with another Cardiff tug. The steamer and her cargo were

estimated to be worth more than $400,000.

There are now known to be some 400 wrecks lying in 20 fathoms of water or more around the British Isles, including 120 wrecks in 12 fathoms or less. It seems highly improbable that any large proportion of these will be salved or that the expense of salvage operations would be justified. During the war, the policy of the admiralty salvage section was to work on the wrecks most easily accessible in order to get tonnage back into service again as quickly as possible during the critical period. The more difficult cases were either left until the last, or salvage work on them indefinitely postponed. It must, therefore, be assumed with reference to the wrecks still under water, that in many cases special difficulties would confront any salvors who might tackle the work.

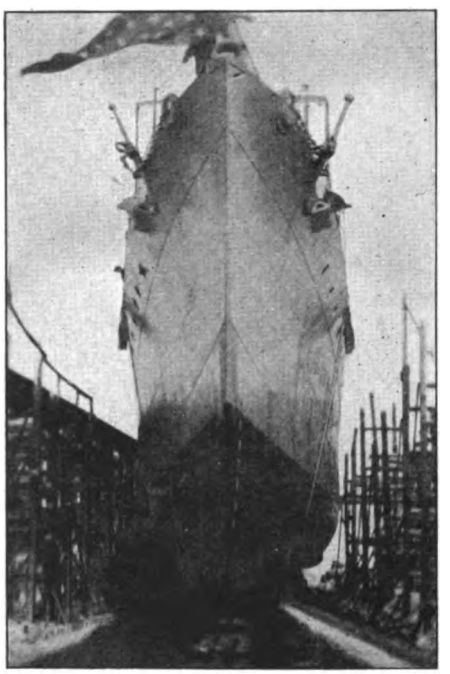
The Mine Hazard

It should be remembered that vessels were often sunk in the mine-infested areas and that the mines could not be swept up from around the wrecks. There is an unusual element of danger, therefore, in the salving of many of these vessels. Again, the concussions caused by mine or torpedo frequently had the most devastating effects on ships' structures, whereas in the case of a collision the damage is usually strictly local. Great expense, therefore, would be involved in attempting to float many of the ships sunk during the war.

In the meantime, also, the cost of repair work has risen enormously with the result that the outcome would be doubtful financially, especially as a lot of new tonnage is being put into the water. Many of the vessels sunk during the war may yet be salved. On some, work might yet be feasible to a limited extent in order to obtain scrap metal, but operations of this latter sort are justified only on wrecks which lie in such positions that they may be readily cut up. This requires a sheltered situation, and it is necessary also that the wreck be close to some port where there is a market for the old metal. Probably only a few of the wrecks fulfill these conditions.

Another deterring influence on British salvage operations at the present time is the excess profits tax. In view of the essentially speculative character of their work, the chancellor of the exchequer permits salvage companies to retain a total statutory amount of 18 per cent on the capital employed instead of the usual 9 per cent which applies to ordinary industrial undertakings. This allowance, however, is not considered adequate by the salvage companies. The circumstances under which they work are undoubtedly peculiar. The speculative element always bulks large. A big sum of money may have to be expended in attempting to raise any particular wreck. All the plans may be well laid and be proceeding well when at the last moment bad weather may spring up and the work of weeks be rendered useless. Consequently since there is always the chance that much time and money may be spent in vain, the salvage companies argue that they must look to a few successful operations to recoup them for their losses.

It was fitting that the anomaly existing before the war of a big British mercantile marine without adequate salvage craft should be rectified. The facilities available under the British flag are now much more extensive and complete than they were five years ago. But it would seem that for all of the existing salvage ships and organizations to justify their existence in the future, there must be quite a considerable number of wrecks annually. The true salvage expert must possess a number of exceptional qualities, such as enterprise, resource, patience and fearlessness, and the younger men must now prove, when occasion arises, that they possess these characteristics in the same marked degree as the comparatively few men who have in the past greatly distinguished themselves in British salvage work.



U. S. DESTROYER PREBLE

William Cramp & Sons Ship & Engine Building Co., Philadelphia, reports a surplus, after charges and federal taxes, of $2,104,562, equivalent to $31.54 a share on the capital stock for 1919 as compared with a surplus of $1,807,405, or $29.63 a share for the preceding year.

Will Start Work on Battle Cruiser

The keel of the world's biggest warship, the LEXINGTON, will be laid at the Fore River, Mass., plant of the Bethlehem Shipbuilding Corp., Ltd., within a few months. The LEXINGTON is the name-ship of a class of battle cruisers which will give within four years a fleet of six big-gun fighting ships. Her sister ships, the CONSTELLATION, SARATOGA, RANGER, CONSTITUTION and UNITED STATES, are also under contract. The LEXINGTON will displace 43,200 tons and will have 180,000 horsepower. Her length of 874 feet is within 46 feet of the length of the LEVIATHAN. She is to be equipped with electric drive and will attain a speed of 35 knots. Defense against submarine torpedoes will be obtained through fore and aft torpedo defense bulkheads by which the stability of the vessel will be preserved no matter where she is pierced. An indication of the LEXINGTON'S size is afforded by comparison with the British warship HOOD which is the biggest ship in the British navy and afloat:

	LEXINGTON	HOOD
Speed	35 knots	31 knots
Displacement	43.200 tons	41.200 tons
Length	874 feet	860 feet
Horsepower	180.000	144.000
Big guns	8 16-inch	8 15-inch
Main armor	5-inch	12-inch

Launches Destroyer

A valuable addition to the navy was made recently when the destroyer PREBLE, shown in the accompanying illustration, took the water at the Bath Iron works, Bath, Me. The PREBLE is named after the famous Commander Edward Preble.

Launch Maine Tanker

A recent launching at the Texas Steamship Co.'s plant, Bath, Me., was that of the steamship SOLITAIRE. This is the twenty-seventh hull to be launched at the Texas plant since the yard was started. Her overall length is 328 feet with 43.6-foot beam and a 22.6-foot draft. One of the features of the launching was that the vessel was 100 per cent complete and ready to go on her trials as soon as she touched the water. The construction of the vessel establishes a record at Bath for severe weather building, as the keel was laid less than six months previous to the date of launching. The SOLITAIRE is a twin-screw vessel propelled by two 625-horsepower McIntosh & Seymour diesel engines. The windlass, steering gear, winches and all auxiliaries are operated by electric motors. Four generators driven by the engine furnish the current for the motors.

GENIUS OF NAVIGATION, TOULON, FRANCE

The traffic of the high seas is one of the greatest elements contributing to the abundance and prosperity of a nation.—(Colbert, Minister of Louis XIV.)

Colonies Point Way to French Shipping

BY FRANCIS MILTOUN
Paris Representative, Marine Review

FRENCH shipping is, in the mass, essentially a Mediterranean and Near East proposition. Marseilles is the gateway to all French colonial possessions—to north, east and west Africa, from Tripoli to Senegal, to the Black sea ports, the Echelles du Levant, Syria, Indo-China, Madagascar, Pondicherry, New Caledonia and the islands of the south Pacific.

For this reason French shipping development of the future is bound to be more notable in the Mediterranean than in the distinctive transatlantic and western trade routes. Less conflict will result with the competing forces of the United States and England, and eventually those of Germany, if France puts her major energies to the development of that traffic which passes to and from her shores via the Dardanelles, Suez or Gibraltar out of Marseilles. This great port is the Lacydon of the ancients and came to its first great prominence as a shipping center in the seventeenth century, when Colbert uttered his words of wisdom.

Further proof of France's opportunity in the Mediterranean is found in the intensively centered shipbuilding industries neighboring upon Marseilles—at Port de Bouc, Menpenti, La Ciotat, La Seyne and Toulon. Another factor for building and holding this trade is the project already begun for a canal from Marseilles to the Rhone, the canalization of the Rhone to Lyons, and its ultimate connection with the Rhine below Bale, and with Switzerland via Geneva. Marseilles thus has fully 60 per cent of the whole area of France, including Alsace and Lorraine, tributary to its port, fully three times the area of the sphere of influence of any other French port. This may be questioned and debated by the partisans of other French ports but on the basis of geographic and economic claims the argument can not be downed.

New Trade for Marseilles

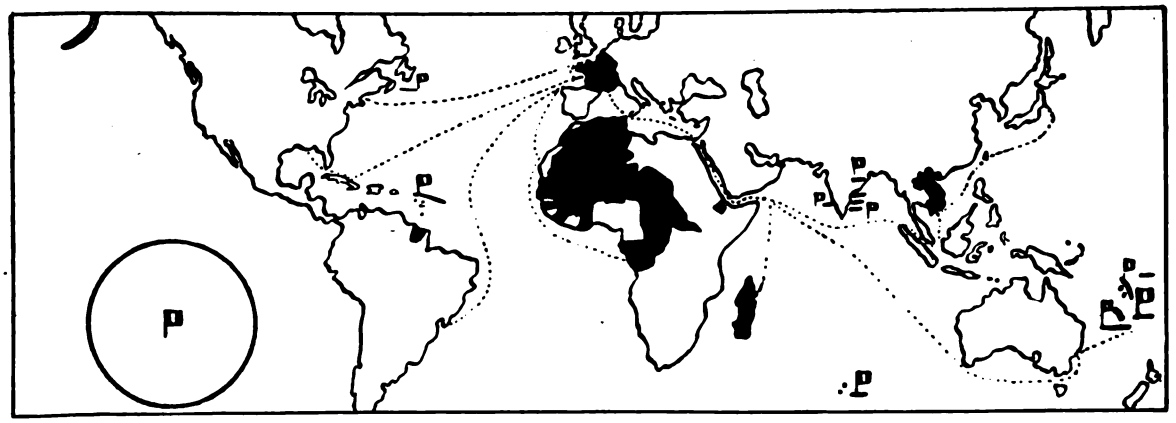
Above all, this Rhone and Rhine canal project will sooner or later deflect much Atlantic seaboard traffic to Marseilles and its satellite port of Cette. Lyons, the silk capital of the world, will practically have its Japan and China raw silks landed at its door; Switzerland can land her foodstuffs on her doorstep by cargo transhipping appliances without the hand of man ever once touching them; export steel rails may be brought down the Saone canal to tidewater from Lorraine, and locomotives and metal manufactures may be shipped from Le Creuzot, Roanne and Saint Etienne without once even having to take to the rail. Marseilles is prepared for this trade with enclosed basins of 750 acres and wharf space, much of it under roof, of 300 acres.

French ports rank in importance as to tonnage entries as follows:

	1913	1915	1917
Marseilles	8,938,652	7,681,833	6,147,183
Bordeaux	4,377,569	4,656,688	1,195,901
Saint Nazaire and Nantes	3,706,759	4,769,698	4,292,367
Rouen and Duclair	5,607,508	8,324,225	9,680,575
Le Havre	3,668,414	4,941,579	5,462,017
Dunkerque	3,885,969	1,549,083	3,930,947
Cette	1,152,926	1,313,518	1,600,260

The great project for the development of the French merchant marine thus hinges on Marseilles, leaving the greyhounds of the transatlantic lines to Le Havre, Cherbourg and Boulogne, the relatively small direct traffic with South America and the Antilles to Bordeaux and La Pallice, a certain obvious freight traffic to Nantes and Saint Nazaire and the coasting and fishing trades to the Breton, Norman and channel ports. The growing importance of the port of Dunkerque, the true enough northern gateway to the great industrial region of the north and east, should not be ignored. This port already owns the registry of some 50 odd deep-sea ships.

The most recent manifestation of a regularly established French steam-



SHIPPING RELATIONS OF FRANCE ARE CHIEFLY WITH HER COLONIES AND SPHERES OF INFLUENCE DOTTED AROUND THE WORLD

ship line is that of the Transports Maritimes à Vapeur, a Marseilles company, which once again establishes the pre-eminence of Marseilles as the most important gateway of French maritime commerce.

This line has established a semi-monthly freight service from United States Pacific coast ports via the Panama canal to Marseilles. The first steamer arrived at its home port in February of the present year, bringing a cargo of 550,000 pounds of canned salmon, 151,000 bushels and 10,735 sacks of wheat, 600 boxes of dried apricots, canned peaches, pineapples and other canned fruits, 10,000 pounds of whalebone, and a considerable quantity of barrel staves. All this merchandise, 5522 tons, was consigned to Marseilles importers. Besides this a miscellaneous cargo further consigned to various Mediterranean ports—Trieste, Greece and Alexandria—was brought by the same vessel.

Present restrictions of importations apply to many products but hardly in a single instance to those which made up this first Pacific-Marseilles direct consignment, so that a new channel of foreign trade appears to have been opened and is likely to remain open.

Statistics of 1919 arrivals and clearances of the port of Marseilles point plainly to its pre-eminence. Ships of all nations arriving and clearing numbered 10,072, with a registered net tonnage of 11,101,424, and cargo of 5,374,822 metric tons. These figures show an increase of 1366 vessels of 3,600,059 tons net and 267,562 tons of cargo over those of 1918.

Ship construction figures as of March 31, 1920, give the following as actually being laid down in French yards:

	Gross Tons
55 steel steamers	237,712
5 wood or composite steamers	1,250
5 wood or composite sailers	1,263
Total	240,225

This tonnage is divided into three distinct categories, according to the classic French formula:

	Gross Tons
I Grand Armament	Above 25,000
II Moyen Armament	5000 to 25,000
III Petit Armament	Below 5000

As a comparison with the other chief Mediterranean shipping power, it is interesting to note that Italy's tonnage under construction at the same time was 355,241 gross tons, nearly 50 per cent more than that of France.

CHARACTERISTIC FRENCH SAILING SHIPS IN THE OLD PORT OF MARSEILLES

National Sentiment Lags

General interest in French shipping is difficult to stimulate among an essentially agrarian population with home grown ideas, the bucolic mind not realizing that it is now necessary for the country to buy wheat and coal and sugar abroad in far larger quantities than ever before, since the former and the latter were entirely produced at home before the war and coal to the extent of two-thirds its consumption. A start has been made toward making shipping needs known to the public with the founding of the French Navy league, with 175,000 members to date, a small membership as compared to Germany's legions of before the war which numbered 1,400,000.

As for tangible signs of progress for the re-establishment of the French merchant marine, the government is to spend 35,500,000 francs in addition to the former budget for port works, lighthouses and light vessels, drydocks, etc.

The French government control of shipping resulted in a profit to the state of 109,000,000 francs in 1919. This, of course, was paid by the freighter—all indeed who had freight on board, and as the French radical press puts it was, in fact, paid by the ultimate consumer.

The French prewar policy of government ship subsidy still operates under the law of April 19, 1906, but applies only to vessels of French construction. In 1913, these *primes*, or bonuses, amounted to but 18,136,878 francs, or little more than $3,000,000 at the normal exchange rate, so the claim can hardly be made that French shipping is largely subsidized. This subsidy is decidedly not to be considered a great factor in upbuilding the merchant marine of France. Far

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FRENCH STEAMERS OPERATING IN ORIENTAL TRADE BERTHED AT MARSEILLES

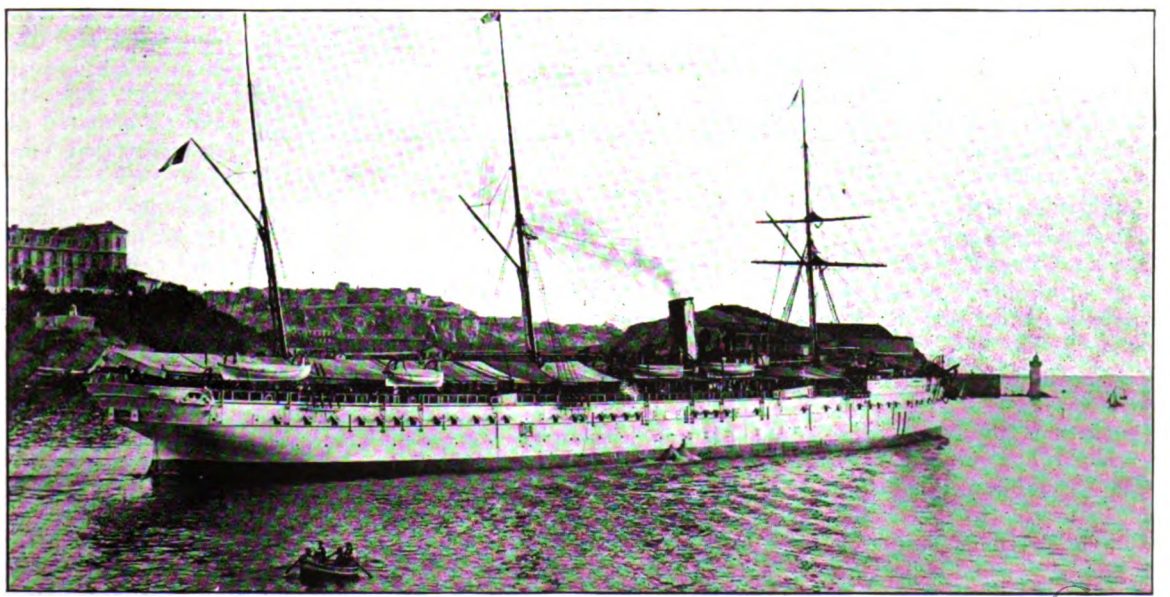
more would be accomplished if the interior railways all granted preferential tariffs to freight going and coming by sea, as was the case with Germany.

France should build up an export trade which figures up to the scale of before the war, or beyond, particularly when she begins to ship abroad the surplus iron and steel products from Lorraine a traffic which will need all possible encouragement, considering manufacturing costs of France, as compared with those of America.

Allocation has been made to France of 150,000 tons of German ships, the value being estimated at 400,000,000 francs. These, according to the figures of Paul Bignon, secretary of state for merchant marine, will bring the gross tonnage of the French merchant fleet well up to 3,500,000 tons or considerably more than French prewar tonnage. The German tonnage is distributed as follows:

	Tons
Compagnie General Transatlantique	32,944
Messageries Maritimes	29,226
Chargeurs Reunis	7,529
Navigation du Sud Atlantique	15,262
Transports Maritimes a Vapeur	11,014
Compagnie Cyprien Fabre	6,980
Societe Navale de l'Ouest	4,901
Societe Gen d'Armament	7,057
Compagnie Navigation Paquet	4,771
Affreteurs Reunis	3,830
Compagnie Havraise de Navigation	3,644
Compagnie Nantaise de Navigation	3,385
8 other companies	19,256

Some Germany shipping companies find operations profitable. The Argo Steam Navigation Co., Bremen, reports net earnings of 3,860,000 marks in 1919, compared with 860,000 in 1918, and the paying of a 30 per cent divident instead of 6 per cent as in the preceding year, according to the *Kolnische Zeitung*. The balance carried over was 242,535 marks, against 173,575 last year. Depreciation of the mark reduces the actual gain.



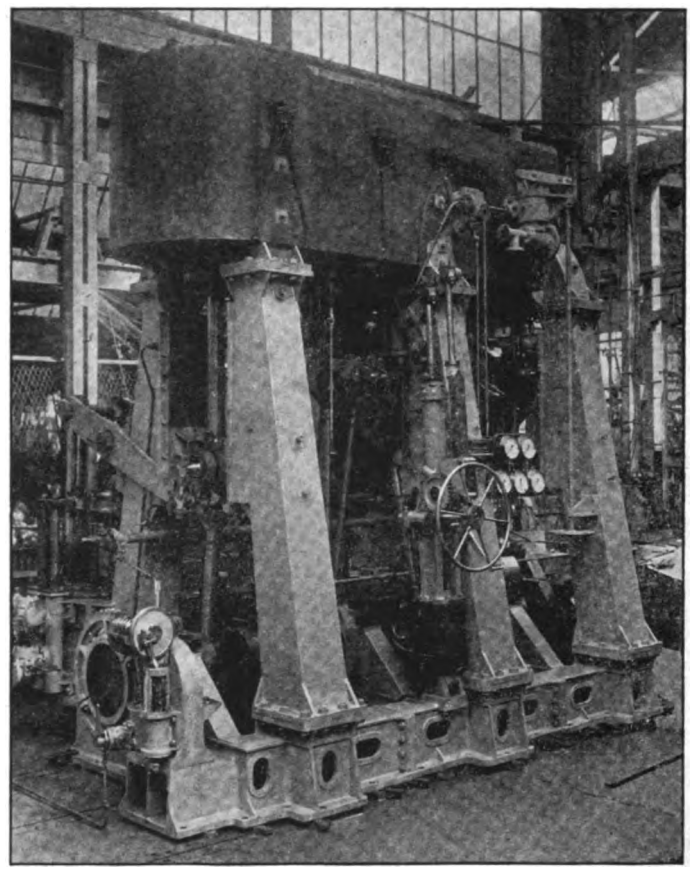
MAIL STEAMER OF MESSAGERIES-MARITIMES IN THE MEDITERRANEAN. THIS COMPANY LOST 11 STEAMERS DURING THE WAR

What the British Are Doing

Short Surveys of Important Activities in Maritime Centers of Island Empire

DIFFICULTIES in the way of obtaining bunker coal in the United Kingdom continue acute and to some extent at any rate the difficulties are attributable to too strict an application of what is known as the zone system. This rule provides that the ports of Liverpool, London and Southampton and other south coast of England ports shall be supplied solely from South Wales, the output of the Lancashire and Yorkshire coalfields being allocated mainly to meet the demands of the industrial area in the Midlands. The only bunkering center which is supplied from Yorkshire seems to be the Humber ports on the east coast of England, and these ports are so supplied because there appears to be no other source available. This policy has resulted in some curious experiences. Recently a steamer required bunkers in Glasgow for a round voyage. It was stated that ample coal was available in the harbor at the time and that the colliers at Glasgow were actually working short time. Yet, even with the conditions of supply apparently favorable, this steamer was refused bunkers, because she was proceeding to Liverpool to load cargo, where according to the zone system she should bunker with Wales coal. A modification of the regulations was finally secured and supplies were obtained at Glasgow. Cases of this kind are constantly occurring but the regulations are seldom annulled.

Another instance is that of a British liner in the river Tyne which could not secure bunkers in that area, even at the price then ruling, 120 shillings, or $23 a ton. The manager of this ship learned that coal was available at Grangemouth at 70 shillings or $13.50 a ton and arranged to dispatch the vessel to that port. But the committee in the Firth of Forth ruled that the steamer could not be allotted coal at Grangemouth as she was already in a bunkering port in another district. No regard seemed to be taken of the fact that coal was available in one district and not in another, and the vessel was delayed 14 days while waiting for bunkers. This situation is of general importance because it affects American and other foreign ships bunkering in British ports at the present time.



VERTICAL, INVERTED, TRIPLE EXPANSION CONDENSING ENGINES, 1200 I. H. P., BUILT BY J. SAMUEL WHITE & CO., LTD., FOR THE S. S. ARGONNE

* * *

ALTHOUGH Great Britain is today far from being ruled by the proletariat, labor, relatively scarce and, therefore, having the whip hand as elsewhere throughout the world, is finding its opportunity and taking full advantage of the situation through its well organized labor unions. In Ireland, while the political general strike in April and May did not affect the shipbuilding industry in Belfast, in Dublin the reverse was the case and both yards in that city were closed down. At Londonderry on the second day of the strike one section of the men downed tools but the yard carried on. Several vessels being discharged at Belfast by members of the Irish Transport union were held up but the majority of the dockers belong to the National Union of Dockers which ignored the strike. The Provisional National Council of Port Labor employers and the National Transport Workers' Federation of Great Britain have finally come to an agreement, with a view to improving the status of the dock laborers, securing mutual co-operation in improvement of output and timekeeping and the avoidance of strikes. It has been agreed that the minimum daily wage on the half-daily basis for the greater ports shall be 16 shillings ($3.10) per day and for the smaller ports 15 shillings ($2.90) for laborers, whether casually or regularly engaged, whose duties comprise the actual handling of cargo in or on ship, quay, warehouse or craft. This agreement came into force on May 10. The federation and its affiliated unions on their part have undertaken that the employers shall have the benefit of eight hours full work per day. It is understood that all differential rates, such as extra payment for the discharge of timber and for the working of exceptionally dirty cargo, will be retained.

* * *

SHIPBUILDERS in Great Britain are once more finding themselves thwarted by the attitude of labor in their efforts to introduce mechanical appliances in their yards. Mersey branch No. 50 of the National Amalgamated Union of Labor has passed

a vote of condemnation on the district official delegate and the district committee for allowing mechanical scaling hammers to be introduced and demonstrated in Cammell Laird's works, Birkenhead, after the refusal of Harland & Wolff's men at Booth to use them. These troublemakers are threatening to take drastic action should this labor-saving device be introduced on the Liverpool side of the river.

* * *

FOLLOWING the big increase in port of London dues occasioned by the huge extra sums to be paid the dockers, it has been decided to raise the existing dock and warehouse dues, rates and charges from 85 per cent to 150 per cent; dock dues on vessels in Class 1 will be raised from 82½ per cent to 147½ per cent; and rent on vessels and lighters from 70 to 135 per cent. The Mersey dock and harbor board has decided to increase the charges for appropriated berths at the Liverpool and Birkenhead docks as from July 2 next. Dock dues at Bristol and Swansea are also to be increased.

* * *

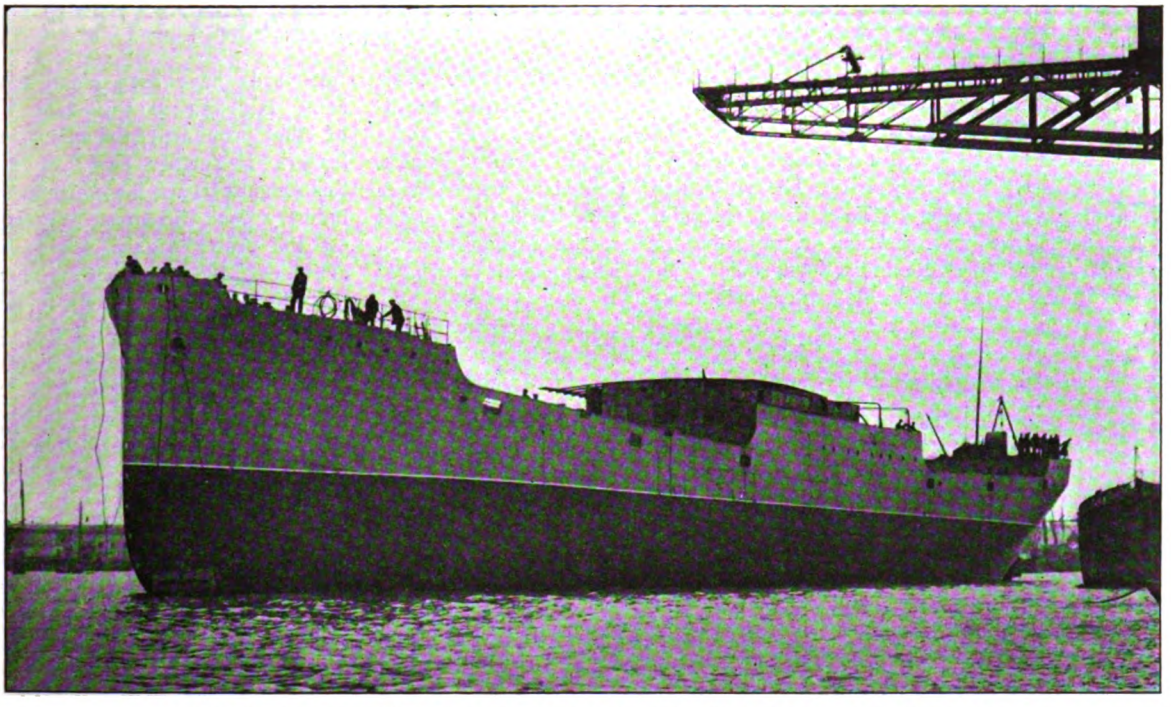
TRADE between the Tyne and Scandinavia is growing rapidly and with the increase of passenger steamers plying between Newcastle and Bergen and Gothenburg, additional berth accommodation will be needed at the first-named port. Newcastle Quay, England, is being extended to meet the larger needs of the Scandinavian trade. The 17-knot geared turbine steamer LEDA is now being completed by Sir W. G. Armstrong, Whitworth & Co., Ltd., for the Bergen Steamship Co., and is likely to mark an important step forward in quick traveling between England and Norway. The expansion of the Norwegian mercantile fleet also continues, by tonnage built on the northeast coast of England. A 2600-ton steamer has been launched by Osbourne, Graham & Co., Ltd., Sunderland; a 6200-ton deadweight steamer, RYGJA, built by John Blumer & Co., North Dock, Sunderland, has also been launched for a firm at Bergen and a general cargo and passenger steamer has been built for Trondhjem owners. This last named boat is said to be the first merchant vessel to be fitted with Barr & Stroud's range-finder, which gives the actual distance of any object at sea at a single reading. The GUNNY, a steamer built to the order of John Eliassen, of Bergen, 299 feet long, with a deadweight capacity of 4050 tons has been launched by Eltringham & Co., Ltd., of Willington Quay on Tyne.

* * *

DELAY in port is at the present time a material factor in the increased cost of operating ships. Official statistics of the number of vessels awaiting berths give only a general impression of the waste of shipping resources arising from detention. Nor are port delays the only factor which have gone to increase the cost of overseas transport. Statistics of ships running in the Indian service from Birkenhead, England, and Newport, Wales, show that port charges, bunker coal, running expenses, etc., for a single round voyage have increased during the past five years from £12,120 to £25,594 (nominally from $60,000 to $128,000), a rise of over 100 per cent. This comparison is quite apart from the extra charges and loss of time arising from the inability to obtain anything like a quick turn-round.

* * *

THE largest ship ever built in the Isle of Wight, the ARGONNE, has been recently completed by J. Samuel White & Co., East Cowes, to the order of French owners. The length overall is 293 feet, beam 40 feet, deadweight 3000 tons. The vessel is divided into seven watertight compartments consisting of forepeak, two fore cargo holds, engine and boiler space, two after cargo holds and after peak. The total cargo capacity of the holds is 132,700 cubic feet. The propelling machinery, constructed by the builders, consists of a set of vertical, inverted, triple-expansion, surface-condensing engines.



LAUNCHING S. S. ARGONNE, THE LARGEST VESSEL EVER BUILT ON THE ISLE OF WIGHT

* * *

AN AMALGAMATION of the interests of Richardson Duck & Co., Thornaby, England, and Blair & Co., Stockton, England, is reported. The controlling interest in these Tees river firms has been secured by J. C. Gould, Cardiff, Wales, in connection with Goulds Steamships & Industries, Ltd. The sum involved is approximately £2,250,000 ($8,600,000). Blair's engineering works is one of the oldest in the country. At Richardson Duck & Co.'s shipyard there are four berths from which a total tonnage of 20,913 was turned out last year. In 1914 the profits of the shipyard totaled £40,-

142 ($153,000). Last year's profits reached £130,000 ($500,000) and from orders in hand the present year's profits are estimated to reach £109,500 ($415,000).

* * *

A PROMINENT shipbuilder of Southwick, Sunderland, England, John Priestman, states his belief that when present contracts are completed, which will probably be in the course of the next two years or so, it will be difficult to get new orders owing to high prices. The present tendency of the freight market is decidedly on the downward grade and if freights continue to fall it will be impossible for shipowners to carry on their business at a profit, since owing to the excessive costs of production the price of ships is today four times as much as before the war.

* * *

THE second ship of the Cunard company's postwar fleet, the ALBANIA, has been launched at Greenock, Scotland. This vessel is 12,000 tons gross, oil-fired, with two sets of Brown-Curtis triple-expansion double reduction-geared turbines, giving her a speed of 16 knots. The Cunard company has also definitely decided to resume the call at Queenstown by its steamers sailing between New York and Liverpool. The first call since the war was made by the ex-German liner KAISERIN AUGUSTE VICTORIA on the homeward passage on April 24. The White Star liners will also resume the Queenstown call at an early date. The new Peninsular & Oriental line steamer NARKUNDA left London recently on her maiden voyage to Bombay. She is 15,400 tons gross and is equipped with the latest contrivances contributing to safety in navigation.

NARKUNDA has a cruiser stern and three funnels. The deckhouses are enameled white, this being quite a departure from the familiar buff paint of the P. & O. liners.

Canadian Shipbuilding Revives

THE war put the Canadian steel shipbuilding industry on its feet. At the outbreak of hostilities Canada had several yards that turned out steel vessels, but only two of these were thoroughly modern. Today, 14 such plants are in operation in various portions of the dominion. The most important of these are located on the Atlantic and Pacific coasts and on the St. Lawrence river.

On the Atlantic, the largest plant is that of the Halifax Shipyards, Ltd., which in 1918 began operations through acquiring the plant of the Halifax Graving Dock. Additional land has been acquired which will increase the property to 46 acres. Heavy expenditures have been made on the plant, everything having been done with an eye to permanency. Two thousand workmen are employed and the company is directed by men whose position, both in the industrial and the shipping world, is a guarantee that its operations will not be confined to the present scale, but will be extended to the limit warranted by the conditions of the industry.

On the St. Lawrence, the most important plant is that of the Canadian Vickers, Ltd., Montreal, which, during the war period, turned out 280 vessels of all kinds for the allied governments. It has also built nine vessels for the Canadian mercantile marine and has contracts for four or five more. Other yards on the St. Lawrence are those of the Davie Co., Levis, and the Tidewater Co., Three Rivers.

On the Great Lakes, steel shipbuilding plants are located at Toronto, Kingston, Collingwood, Welland, Midland, Port Arthur and Bridgeburg. When completed, the plant of the Dominion Shipbuilding Co., Toronto, will have cost $2,500,000.

On the Pacific coast, the leading yards are Coughlan, Vancouver; Wallace, North Vancouver; Yarrow, Esquimault; the Machinery Depot Co., Victoria, and Mullen, at Prince Rupert. These British Columbia yards have done splendid work, having completed a very busy year, the tonnage turned out during 1919 being equal to 170,000 deadweight.

The entrance of the government as a factor in the building of ships has been largely instrumental in developing the shipyards. Indeed, had such action not been taken, the dominion probably would not have anything like the building or shipping record it has to its credit. Soon after the outbreak of hostilities in 1914, the Canadian yards began to experience the benefits resulting from an increased demand for tonnage, but even though the marine department exerted its utmost influence to secure orders for Canadian yards, still the results were disappointing. It was not until the imperial munitions board, acting as the agent of the British government and sustained by ample credits from the dominion government, began to place orders for ships that the industry got on its feet. The value of the orders placed by the board aggregated $70,000,000. The industry received another strong impetus through the action of the dominion government in launching its shipbuilding program, which has resulted in the creation of a federally owned Canadian mercantile marine. To date, 60 cargo vessels, with a tonnage of approximately 360,000 deadweight, have been contracted for, involving another expenditure of approximately $70,000,000.

The fact that several steel shipbuilding yards had come into existence before the war is good evidence that the men behind them believed that there was a future for the industry. The comprehensive scale on which the Halifax yards have been planned and are being laid out at this date, by some of the prominent Canadian industrial leaders, is further proof of this. On the Atlantic coast the prospects for the industry look brightest, it being nearest the center of the world's shipping activities. The cost of production in that district is most likely to permit of competition with British yards. The future of the St. Lawrence yards as a factor in the shipbuilding industry would seem to be reasonably assured. On the Great Lakes, the yards have manifest limitations, but there will always be a certain amount of work offering for vessels of canal size. Of the future of the industry on the Pacific coast, it is impossible to speak with any degree of certainty; for there are too many unknown factors in the situation. In the matter of prices, the British Columbia yards have done as well as any in the dominion, having bid as low as $167.50 per ton on several vessels for the mercantile marine. Before the signing of the armistice, the average price paid on these contracts was $199.63 per ton. Since that time the average price has been $173.17.

C. C. Ballantyne, minister of marine and fisheries, is confident of the future of the industry, if assistance is granted to it. Recently he said: "There is no reason whatever why Canada's shipbuilding policy should not be permanent, with the necessary assistance that the government may offer. It always was my intention that it should be." He thinks that Canadian yards can, in the matter of price, compete at present with those of Britain, but that when the present rush of work slackens, competition will be keener and Canadian yards will need protection. On this point he says: "In my opinion the bonus system will meet the situation best."

Short of an official announcement, this

is about as clear an indication of the government's policy as could be desired. Up until now, Mr. Ballantyne has had his own way in these matters and the indications are that he will have it in the matter of a permanent policy. Even now in building wooden ships, the government is assisting some of the British Columbia yards to the extent of guaranteeing a certain proportion of the cost. The great preponderance of expert opinion is that the industry must receive some form of assistance and the proposals favor most the policy of bonusing. Behind all this there is undoubtedly a strong national sentiment, which is proud of Canada's achievements in the building of ships, and of the rapidly growing tonnage of ships on Canadian register, and which further realizes the importance of the shipbuilding industry in the industrial life of the country. Canada, however, being of but limited financial resources, is restricted in giving assistance to this or any other form of industry.

New Cunard Oil-Burner

Latest addition to the transatlantic fleet of the Cunard line to be launched in Great Britain is the SCYTHIA, recently sent down the ways at the Barrow-in-Furness yard of Vickers, Ltd. There are now 18 liners under construction for the Cunard Steam Ship Co., and it is believed that additional keels will be laid by Vickers in the near future since the Cunard company has announced it has entered into "a close understanding" with Vickers interests.

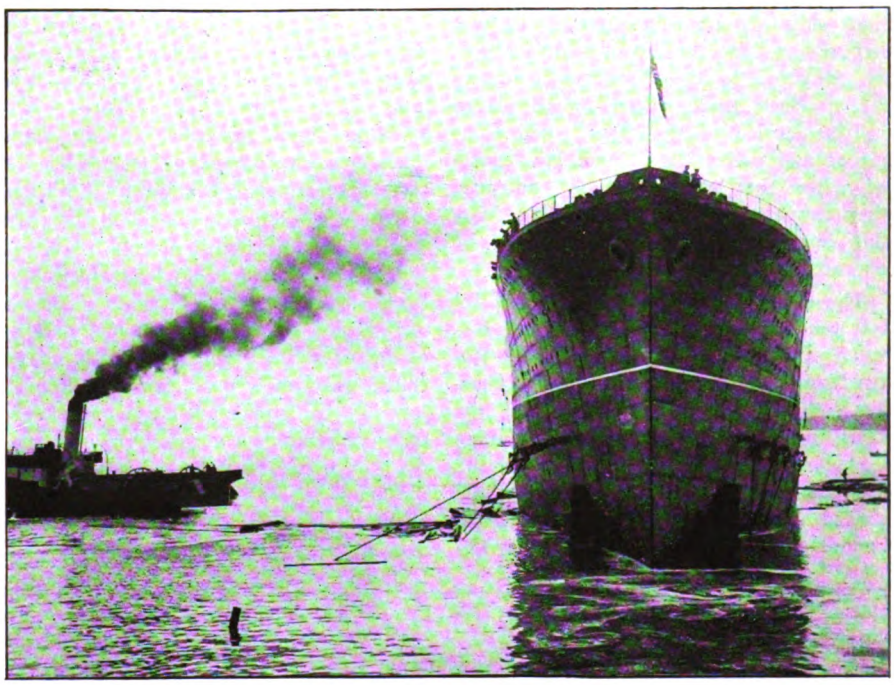
The launch of the SCYTHIA is shown in the accompanying illustration. This new liner is 625 feet in length, with a beam of 74 feet and a draft of 30 feet. Her depth from keel to funnel-top is 140 feet. She has a displacement of 27,000 tons, and her average sea speed with her 12,500-horsepower engines will be 16 knots.

She is said to be the largest liner to have been designed and built in Great Britain for burning oil fuel and the first vessel of the liner type to be fitted with double reduction-geared turbines. Her deck machinery will be electrically driven as will the steering gear and she will be fitted with a gyroscopic compass. She will be completely fitted out for the comfort and enjoyment of the passengers, the SCYTHIA being in fact the first of 12 so-called luxury Cunarders now under construction.

A Portuguese shipyard recently completed a 3500-ton vessel, the CABO DA ROCA, the largest craft to be built in that country.

Launch Italian Liner

Messrs. Swan, Hunter & Wigham Richardson recently launched from the berth once occupied by the famous Cunard royal mail steamer MAURETANIA at their Wallsend shipyard, a magnificent liner of some 20,000 gross tons which is being built for the Navigazione Generale Italiana, Genoa. This ship, the GIULIO CESARE, is to run in the owners' service between Genoa and Buenos Aires, and will be one of the most luxurious of the many passenger liners plying between Europe and Argentina. The vessel is 633 feet long, 76 feet beam with a molded depth of 50 feet. The ship has a straight stem and a cruiser stern.



NEW CUNARD LINER, SCYTHIA, IMMEDIATELY AFTER LAUNCHING AT THE YARD OF VICKERS, LTD., BARROW-IN-FURNESS, ENGLAND

The propelling machinery and boilers have been built by the Wallsend Slipway & Engineering Co., Ltd. The main engines consist of four geared turbines driving four propellers. The high and low pressure turbine units work in series, which arrangement applies both to the ahead and astern direction of rotation. The steam is superheated up to 200 degrees Fahr. on entering the turbine maneuvering valves. In case of a breakdown to any of the turbines, they are arranged so that the high pressure and low pressure units can be operated independently. Six double and four single-ended multitubular boilers are placed in four watertight compartments. The working pressure of the boilers is 222 pounds per square inch under Howden's forced draft. The designed speed of the ship is 19½ knots on a 24 hour trial.

The GIULIO CESARE has eight decks chiefly given over to accommodations for 1800 passengers, of which 210 are first class, 310 second class and the remainder emigrants. In addition to this, accommodation is provided for over 500 persons comprising the officers, crew, stewards, etc. A feature in the first class passenger accommodation is the large number of *cabines de luxe* arranged on five decks. The public rooms and galleries leading from the promenade deck and also the first class dining saloon, are particularly noticeable for their great height which is much more than is usually found in ships. Among the other attractions in the ship will be a well equipped gymnasium, and a children's dining room The forward part of the upper promenade deck will be protected by large sash windows which can be opened at will. To add to the comfort of passengers, Frahm's antirolling tanks are built in the ship. The ventilation throughout the ship is of the thermotank system, whereby either cold or warm air can be carried into every compartment on all decks where there is living accommodation. Arrangements are made for exhausting vitiated air.

The GIULIO CESARE is fitted with hydraulic elevators for passengers' baggage, stores and a small amount of cargo. An extensive electric generating plant will be installed in the ship for lighting, and also to work the first class passenger lift and other lifts dealing with stores, etc. For the provision rooms there will be a large installation of refrigerating machinery supplied by Messrs. J. & E. Hall, of Dartford.

The GIULIO CESARE is being built to

the requirements of the Registro Nazionale Italiano, of Lloyd's and of the British corporation. She will also fulfill the provisions of the merchant shipping laws of Italy, Great Britain and the United States, especially as regards carrying passengers and emigrants. When designing the ship, a great deal of attention was paid to insure her safety as far as possible by providing a sufficient number of watertight compartments. An effective installation of watertight doors controlled from the bridge is being installed by Messrs. J. Stone & Co., London. On the boat deck, Welin's davits are fitted. Electric boat winches are provided for lifting all the midship lifeboats, which include two power boats. The ship also carries submarine signaling apparatus for service in picking up position in fogs.

New Ship on Run to Tropics

TO ACCOMMODATE passengers traveling to the tropics, the United Fruit Co. has placed in service one of the most luxurious steamers so far owned by this fleet, the ULUA. This ship was built in England, as was her sister ship, the TOLOA, which is to be delivered to the American company later. Both these vessels were placed in the service of the allies when completed and under the British law enacted after the letting of the contracts, they cannot yet transfer their flag from the English although they are to be operated on an American run.

The United Fruit Co. now owns 250,000 tons of ships, having lost the BAYANO, CHIRRIPO, MANISTEE, PATIA, REVENTAZON, SAN ANDRES, SAN RITO, TELA, TENADORES, TORTUGUERO and the ZENT in the service of the allies during the war. Thirty ships are now in the fleet. The ULUA transported between the United States, France, Great Britain, Canada and Russia 728 officers and 15,344 troops, and in addition carried 12,500 tons of war stores and provisions during the war. She has just been reconditioned by England and turned over to her owners.

The ULUA is 425 feet in length, 54 feet wide, and her molded depth measures 32 feet 10 inches. The ULUA, as well as her sister ship, TOLOA, is a 9000-ton vessel, propelled by twin screw quadruple expansion engines. The furnaces are adapted for burning oil fuel.

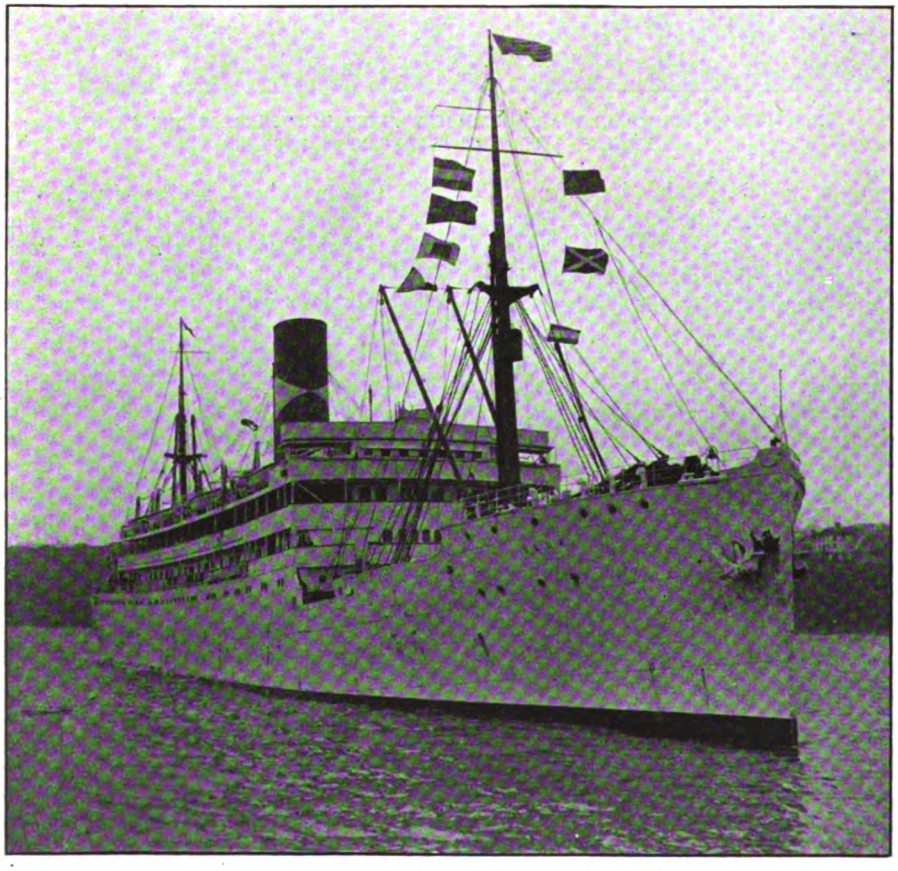
The watertight compartments are automatically operated. A cellular double bottom is fitted fore and aft with bilge keels to reduce the rolling. Lifeboats are carried sufficient to accommodate all on board and are so arranged with lowering gear that they can be instantly lowered by one man. Submarine signals and high powered wireless telegraphy are also installed. A feature of the wireless outfit is a system of storage batteries sufficient to run the electric lighting and wireless set for over 30 hours should the three big dynamos ever be out of action.

She is the first merchant ship equipped with wireless telephone, and as she approached the American coast for the first time early in May, called up the Brooklyn navy yard and gave the telephone receivers there her position and indulged in a little gossip. Capt. William C. Powell said that when the American Telephone Co. completes its wireless telephone stations ashore passengers on the ULUA may call up their home towns far out at sea.

The ULUA has been placed in service between New York and Havana, Colon and Port Limon. Together with the TOLOA, PASTORES and CALAMARES, weekly sailings will be made in this run.

The toilets and bathrooms on the ULUA are of the latest type and are well lighted and ventilated. The fresh water supply is filtered and sterilized. The heating and ventilation of all public and living rooms has been worked out to meet the varied conditions of the voyage, and while in hot or tropical weather, a system of artificially cooled air can be circulated enabling any or all parts to be kept specially cool, even down to 55 degrees Fahr. In addition, all public rooms, suites and staterooms have been fitted with electric fans.

The promenade deck is unusually broad and special attention has been given to the inclusion of various public rooms. The main entrance and reception hall is entered at the fore end of the promenade deck. Immediately adjoining is the social room. The main staircase, situated in the center of the reception hall, descends to the bridge entrance hall, in which is situated the purser's office. Continuing down the staircase, the entrance to the dining saloon is reached. The smoking room is situated at the after end of the promenade deck. On the bridge deck below the smoking room, a palm court and open air cafe has been installed. The ship has 12 private suites, each equipped with a private bath and toilet connections.



AMERICAN PASSENGER LINER IN CARIBBEAN SERVICE

For use on French canals, an electric towboat has been designed to be driven by storage batteries or by current conducted from an overhead wire. The craft is provided with propellers at each end.

No Control for British Shipping

English Flag Pre-eminent Because of Private Ownership—Government Interference Denounced at Meeting of British Chamber of Shipping

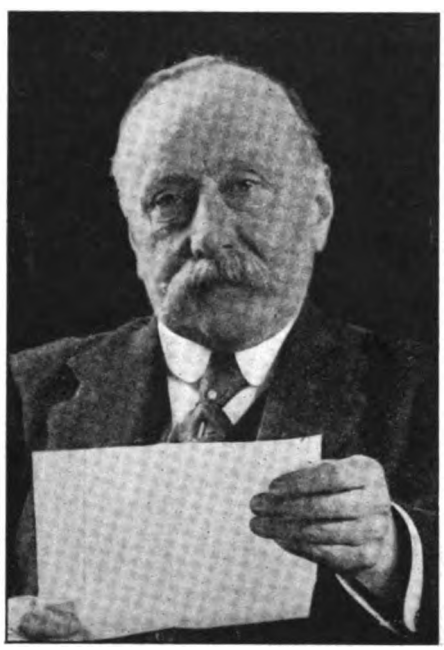
BY H. COLE ESTEP
European Manager, Marine Review

INDIRECTLY at least, a lesson for Americans interested in the development of the merchant marine of the United States is found in the remarks made at a banquet of the Chamber of Shipping of the United Kingdom which was held in the ancient Guildhall of the city of London on the evening of May 12. It was the first dinner meeting of this great representative body of British shipowners and managers to be held for five years—since before the war. The affair was an unusually brilliant one and about 400 attended.

W. J. Noble, shipowner, Newcastle, England, president of the chamber of shipping, occupied the chair. Members and guests attended from all over the world, representing almost every prominent shipowning nation except Germany. At the right of the chairman sat the Lord Mayor of London and on his left Sir Joseph Maclay, shipping controller for the British government. Numerous other distinguished personages attended, including Lord Inchcape, chairman of the Peninsular & Oriental Steam Navigation Co., London; Admiral Sir Frederick Sturdee, who was in command of the British fleet at the battle of the Falkland islands; Lord Sumner; and Lord Robert Cecil, formerly minister of the blockade.

The point which might be brought home to American shipping interests was emphasized by several speakers, but was perhaps as clearly stated by Sir Joseph Maclay as by any of the others. His remarks carried unusual weight because, although formerly a shipowner, he appeared as a representative of the government.

Nevertheless he pointed out emphatically that the British merchant marine was built up to its present pre-eminent position in the world's maritime affairs, maintained during the war, and again brought into the front rank among the world's most successful enterprises not by government action but by the freely acting, individual, private enterprise, of the shipowners and managers of the United Kingdom. Sir Joseph and other speakers including Lord Inchcape pointed out how Great Britain's huge, successful shipping industry is the outgrowth of the initiative and ability of the "merchant adventurers of the empire" dating back to the days of Queen Elizabeth. The hopelessness of creating a successful merchant marine through government ownership and operation was emphasized throughout the meeting. And it was pointed out that Great Britain has already taken steps to free her shipping from a large measure of government control, has sold



W. J. NOBLE
President, Chamber of Shipping of the United Kingdom and a Prominent Newcastle Shipowner

most of her government owned ships acquired for war purposes, and even during the war left the management of her fleet almost entirely in the hands of private corporations.

The Industrial Cul de Sac

From a practical standpoint, Lord Inchcape's remarks were of unusual interest. He said there are only two ways for the nations of the world to extricate themselves from the financial *cul de sac* in which they have been placed by the war, namely by economy, both corporate and government, and by guaranteeing freedom of enterprise, unhampered by socialistic and bureaucratic restrictions. "Leave the British merchant marine to work out its own salvation," he said, and continuing, remarked, "there is nothing so dangerous to a state or industry as the TNT of false economics."

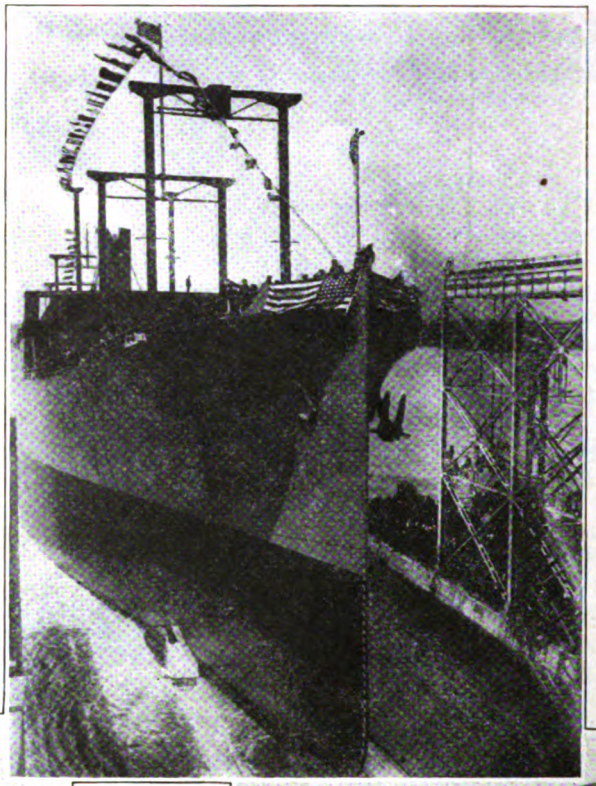
Lord Inchcape said further in part: "We are all up against a serious prospect in the not far distant future. The cost of running ships has increased enormously but I do not despair. We have weathered bad times before and will weather them again, and though we may not have built up the enormous reserves and accumulations of our Dutch, Norwegian, Danish, Japanese and American competitors, I feel assured that by good management and enterprise, by being satisfied with modest returns on the capital we have invested in our business, by putting any surplus we may occasionally have into new and up-to-date ships, if politicians and bureaucrats will only leave us alone, we shall without doubt be able to come to the country's rescue again if it is ever so unfortunate as to get involved in another war."

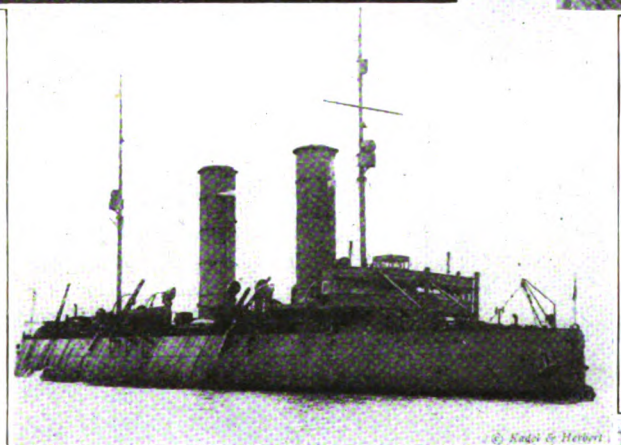
Sets Earning Record

The remarkable record of one French shipping company, the Chargeurs Reunis, before the war, during the war and since, is a subject of comment throughout the French shipping industry. From the operation of a fleet valued at 66,605,000 francs in 1909 to 69,901,000 francs in 1915 and 67,479,000 francs in 1919, net profits have risen steadily to 326,000 francs in 1910, 11,907,000 francs in 1915 and 15,242,000 francs in 1919. The present fleet consists of 29 steamers, the company having lost seven units by submarine warfare during hostilities. The present tonnage of 176,022 is superior by nearly a thousand tons to that of before the war.

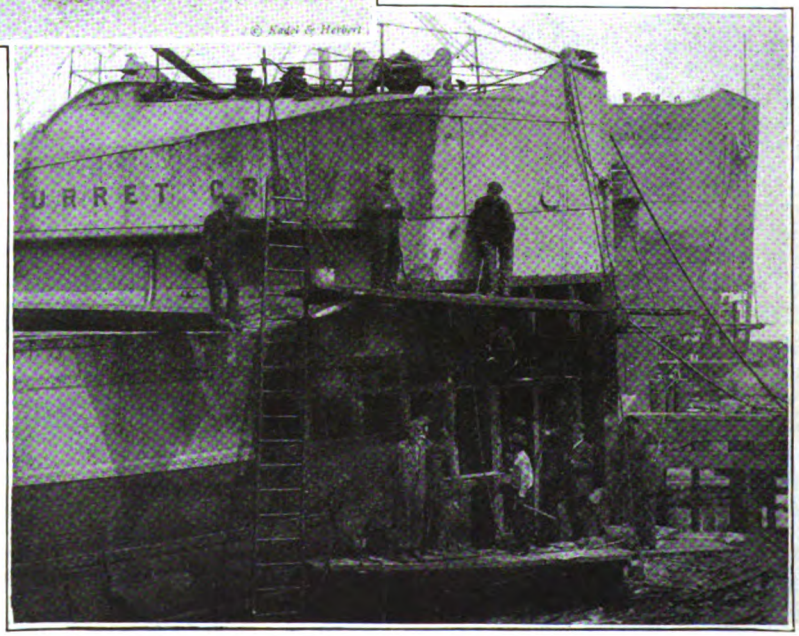
It is the company's policy to carry over 5 per cent of the value of each steamer each year as an amortizing fund and in certain years this percentage has been as high as 10 per cent. The company's record is considered remarkable as economic conditions are decidedly not favorable considering port delays and the general *modus operandi* of handling ships of French register, where the crews are of necessity French maritime conscripts—civilian sailors working under government imposed regulations.

Latest Marine News in Pictures





The British ice breaker Sviatogor, shown above, has left England for the Arctic to rescue starving Russians, men, women and children, entrapped in the Kara sea. Note the combination life boat and sleigh, with which the ship is equipped.

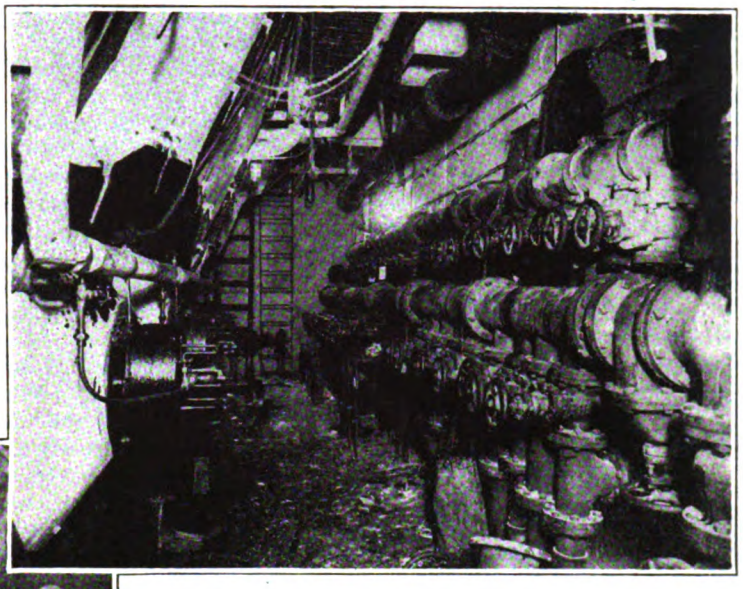


Keystone State, contract ship No. 253, was launched recently at the yards of the New York Shipbuilding Corp. She was christened by Mrs. M. A. Neeland, who appears in the photo with her husband, president of the company.

Turret Crown enroute from Newport Eng., to Hampton Roads, rammed an iceberg. Her crew patched her up and brought her into the Erie basin plant of the Robins Dry Dock & Repair Co.

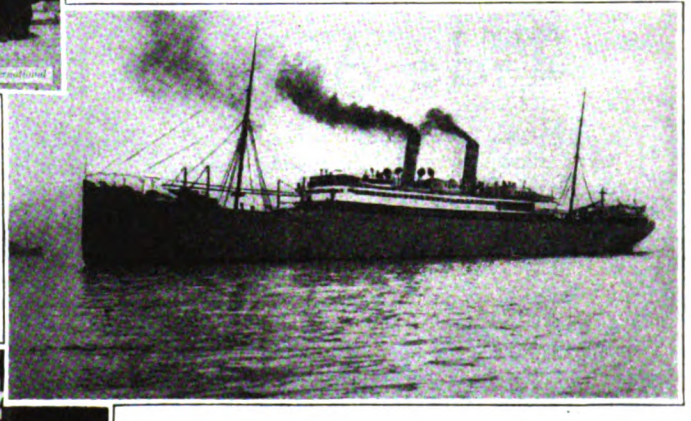
Photographs From Far and Near

Here is an interesting pictorial representation of a recent international arrangement in marine affairs. The Munson line recently took over the Huron, formerly the German liner Friederich der Grosse, seized by the United States during the war. She is now in the South American passenger service.

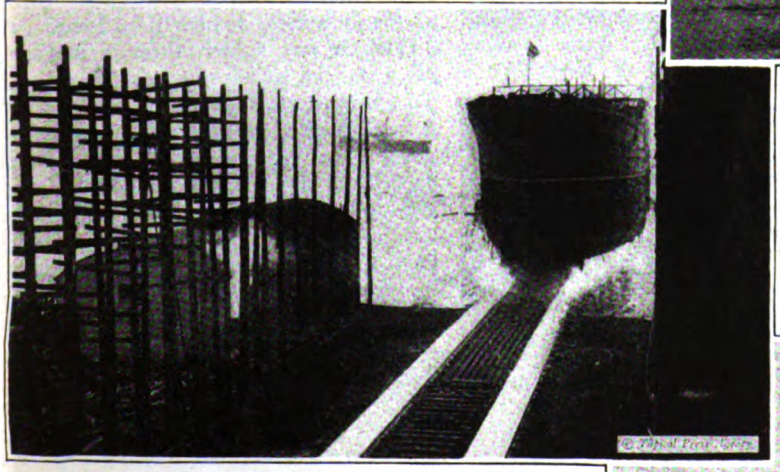


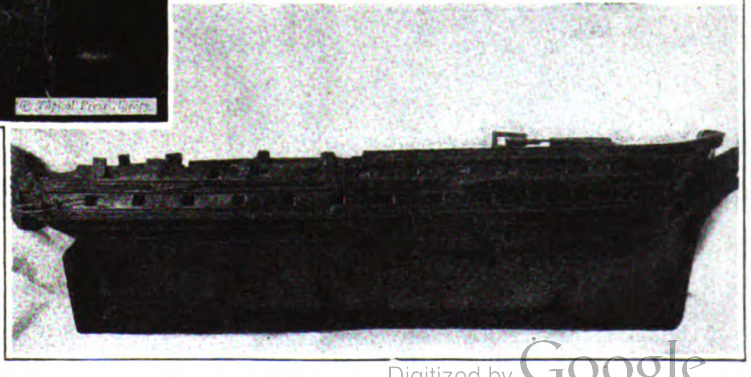
In the process of rebuilding the Huron at the yards of the Morse Dry Dock & Repair Co., Brooklyn, the ship was converted to an oil burner, the picture showing her oil manifolds

A party of distinguished Americans and South Americans attending the taking over of the Huron. Left to right: Alberto H. Almimon; Ernisto C. Preuz, consul general of Argentina; Ambassador Pezet, of Peru; Admiral Benson; Frank O. Munson, president of the Munson line; Ambassador LeBreton, of Argentina; J. Varcela, Minister from Uruguay, and William W. White, consul general from Paraguay.



Trial trip of the recreated Huron. The new fuel oil burning system consists of 24 furnace fronts complete with burners to operate under natural draft, and three oil heaters, any two of which are capable of operating the entire plant.





The new and the old! Cunard liner Scythia, launched at the yards of Vickers, Ltd., Barrow-in-Furness, March 23, and on the right, Fulton's model of his steamboat. The Scythia is 27,000 tons, of the new type of intermediate liner which is coming into greater favor for transatlantic service

Book Review

Marine Gas Engines; by Carl H. Clark, S. B.; cloth; 133 pages, 5 x 7½ inches; published by D. Van Nostrand Co. and furnished by THE MARINE REVIEW for $2.

This book is in its second edition. The author has not endeavored to treat of the subject from a theoretical point of view but has confined himself to principles of construction and operation of standard types of equipment. In the present edition, the author has added such material as was necessary to bring the book thoroughly up to date. The additions include valuable data on oil and gas engines of the diesel type. Many illustrations add clarity to the discussions.

In the forepart of the book, the author describes various types of engines and shows by diagrams just how each type functions. The subject of 2-cycle engines is next thoroughly explained, followed by a description of 4-cycle engines. The problems of vaporizing and ignition are fully described and several illustrations of ignition devices in common use are shown.

How to wire up a marine gas engine installation is a perplexing problem to the layman. The author treats this subject at length and by means of diagrams shows just how to proceed with this work. Sixteen diagrams are included in this section.

The author points out that crude oil engines are operated on different principles than those employed with gas engines. Diagrams of several types of oil engines are shown. An important subject to consider with gas and oil engines is that of lubrication. Several lubrication systems are described. It is pointed out that oil engines cannot be lubricated by the splash system as the air in the base would carry a portion of the lubricating oil into the cylinders which would cause preignition and other troubles.

Crank arrangements on multiple-cylinder engines are fully described by means of diagrams and the whole subject of engines of this type is treated at length. The problem of reversing gas and oil engines is a complex one as mechanical reversing gears have to be utilized. Several types are illustrated and explained for the benefit of those looking for practical knowledge on the subject. Among the reversing devices described is the reversing propeller.

Much propeller data is also included for determining the size and pitch of propellers for different installations. It is pointed out that a certain blade area may be obtained by a relatively wide blade on a small diameter or by a narrow blade on a relatively large diameter.

As the proper functioning of a gas engine in a boat depends largely on the manner in which it is installed, several pages are devoted to this subject which give simple and concise rules to follow. This includes such subjects as the engine bed, exhaust piping, feed line, lining up shafting, etc.

The actual operation and care of gas engines is next treated followed by a chapter devoted to the power of engines. The book is well written and covers the subject in a comprehensive manner.

Death of G. S. Dearborn

George S. Dearborn, aged 62 years, died recently of a pulmonary embolism at his country home in Rye, N. Y., after an illness of but three days. He was president of the American-Hawaiian Steamship Co. and a member of the firm of Dearborn & Lapham. Mr. Dearborn was identified with many important shipping interests and was the organizer of the first mail steamship line between New York and Hawaiian islands. He was a member of numerous clubs.

Tide Aids in Fighting Ship Fire

UNUSUALLY resourceful methods were shown recently in towing the burning steamship OLOCKSON into port and in subsequently extinguishing the flames. The OLOCKSON, which was reported by wireless on March 13 afire off Cape Mala with a cargo of gasoline, was taken in tow by the Panama canal tug GORGONA about 28 hours afterward. She had been abandoned by her crew. The ship sheered so badly —sometimes as much as 90 degrees from the line of tow—that the 1½-inch steel cable parted four times, making it necessary for the crew of the GORGONA to board her to make fast the line. So intense was the heat that it was impossible to make fast to the bow so that the cable was attached to the poop and she was towed in stern foremost. Explosions of the gasoline in the cargo occurred frequently, causing flames to shoot 200 feet into the air.

On the evening of the fourth day, the GORGONA and her tow reached Balboa harbor, canal zone, and the OLOCKSON was beached in a bed of mud. At low tide 10 and 12-inch square holes were cut in her hull with oxy-acetylene torches, permitting the water coming in at high tide to flood the boat. When the tide had reached its highest level, a diver closed the holes by fixing plates over them, and with the help of streams of water played on the flames from above, the fire was extinguished on March 22.

Difficulties were increased when sea water that entered the oil fuel tanks of the OLOCKSON at high tide, forced the oil, which was lighter, through the vent pipes to the surface, where it ignited To prevent this wooden plugs were driven in the vent pipes. As soon as the fire was extinguished the holes were opened to lighten the weight on the ship and prevent her sinking deeper into the mud. The OLOCKSON has since been floated and brought into Balboa where the cargo is being salvaged and plans drawn for repairing the vessel.

Destruction of the OLOCKSON by flames was prevented by admitting the ocean into her holds after ordinary fire fighting methods had failed. The steamer has since been raised and taken to the Balboa repair shops.

Army Supply Base at Charleston

Terminal at South Atlantic Port Meets Commercial Need for Cotton Exporting Facilities — Many Warehouses and Sheds Available

THE Charleston, S. C., army base was designed and constructed to provide a seaboard outlet for the shipment to France of animals and of cotton products originating in the south and southwest.

The terminal is located on the Cooper river between Filbin and Goose creeks, in what is known as North Charleston. This places the plant 8 miles by water, and 11 miles by rail, from Charleston proper. Although commercial utilization of the terminal might, under present conditions, be facilitated were the plant situated closer to Charleston, this location was the only feasible solution for the original wartime shipping requirements for which the project was designed.

The site on which the base has been constructed was selected in 1917 by a committee composed of the city engineer of Charleston, a civilian terminal expert and an army officer, acting under the council of national defense. The property finally acquired by the war department for the entire development, including a large ordnance base and an animal embarkation depot, occupied over a third as much area as the city of Charleston itself. The military traffic which it was proposed to handle also originated entirely outside of Charleston. These and similar factors made the Cooper river site the only practicable location for this base.

Construction of this property was completed in July, 1919, thirteen months having been consumed in the work. The general contractor was the Mason & Hanger Contracting Co., working under the supervision of the construction division of the army. The entire cost of the project totalled $10,605,573.

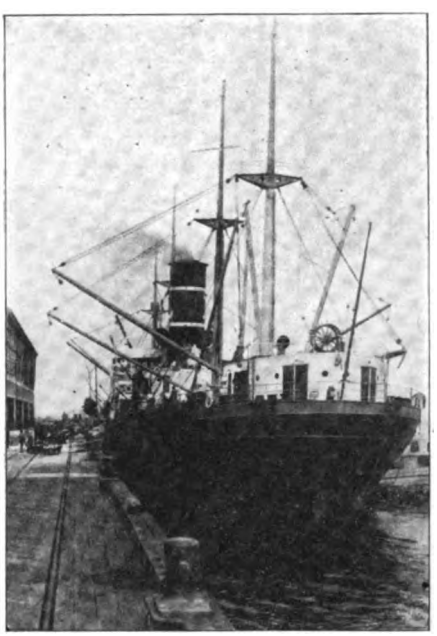
The principal structures included in this army supply base are six warehouses and two open sheds, terminating in two headhouses and a bulkhead wharf, all comprising a total area of 790 acres.

Abundant Storage Area

A distinctive feature of this layout is the large proportion of storage space with relation to ship berthing facilities. Protected storage area of 1,800,000 square feet, and open storage facilities of 1,740,000 square feet are provided within the terminal, while the berthing space along the bulkhead wharf is but 2840 lineal feet.

This arrangement particularly suits Charleston base for the exportation of cotton, which material may be temporarily stored in open sheds and wharf houses or held indefinitely for export shipment in closed warehouses. The installation of an improved cotton compress, such as has proved most successful in New Orleans, is being considered to permit the more efficient commercial utilization of this terminal for exporting cotton.

The Cooper river approaches to the bulkhead wharf of the Charleston



STEAMER LUCKENBACH DISCHARGING CARGO AT CHARLESTON BASE

base have a controlling depth of 30 feet at mean low water, the dock immediate opposite the wharf having been dredged to this depth. This wharf has a total length of 2160 lineal feet. Of this length, 290 feet has a width of 55 feet, while the remaining 1870 lineal feet opposite the two headhouses, is 40 feet wide. Of the latter distance, 150 feet of water frontage has a concrete facing.

The under structure of this wharf is composed of untreated sheet pilings, driven to about 50 feet back of the face of the bulkhead. This 50-foot apron is carried on creosoted piles; those piles inside the sheeting, however, are untreated. The floor load capacity of the wharf is 1400 pounds per square foot. Railroad trackage extends to headhouses and shipside, and for the entire length of the wharf.

Facing the bulkhead wharf are two headhouses each 150 feet wide, the larger being 1360 feet and the smaller 400 feet long. The larger headhouse connects with the six closed warehouses extending 1200 feet inland, while the smaller serves the two open sheds of the same dimensions and layout as the warehouse.

These headhouses are single story buildings of hollow tile and brick construction, with gravel roofing. The walls on the dock side are equipped with rolling drop doors, permitting all sections to be thrown entirely open to facilitate the movement of cargo in or out.

The wood pile foundation gives the floors of the headhouses a load capacity of 500 pounds per square inch. These buildings have a 20-foot clearance throughout with 16-inch tile division walls connecting with storehouses in the rear. A continuous steel walkway for hoisting tackle extends along the entire dock side of both headhouses.

Warehouse and Shed Capacity

The six warehouses extending back from the larger headhouse are each 160 x 1200 feet, single story structures of tile and timber semipermanent construction. The net storage area of each is 172,800 square feet, each building being divided off into twelve 100-foot sections.

The open sheds connecting with the smaller headhouse, while of the same dimensions as the closed warehouses, are of but temporary construction, wooden roofs set on timber supports without flooring, and are designed to provide partial shelter for heavy or unperishable merchandise.

All buildings are equipped with automatic sprinkler fire protection apparatus, and are unheated except for the upper section of one warehouse, No. 6, which is fitted out for office purposes.

The railroad trackage within the terminal totals 22.1 miles. The plant is connected with the mainland by the Charleston Terminal railroad, which in turn feeds from the trunk lines of the Southern, Atlantic Coast line and Seaboard Air line railways.

The rail traffic facilities within the base include a primary receiving yard,

classification and forwarding yards, triple trackage between alternate warehouses, and tracks along the entire length of the wharf. The trackage between the warehouses is sunk so as to facilitate the movement of merchandise from cars direct to 20-foot loading platform with which each warehouse is provided. The total capacity of the terminal trackage is 1435 cars.

Can Berth Seven Vessels

The aggregate operating capacity of the Charleston terminal is rated at 4000 tons, or 200 cars of through merchandise in either direction during a 10-hour working day. The total storage capacity is 325,000 tons. The ship capacity of the plant is restricted to the simultaneous berthing of seven average size vessels.

The material handling equipment, in addition to cargo masts and steel walkway, includes cargo winches and two cranes.

Between Feb. 10 and July 15, 1919, the Charleston army base was actively utilized as a port of debarkation for the return of overseas soldiers destined to points in the south and southwest. During this period a total of 49,600 troops passed through this terminal and proceeded to demobilization camp at Jackson, S. C.

In accordance with earnest presentations made to the secretary of war by the mayor of Charleston, the Charleston chamber of commerce and important interests of that city as to the need for commercial utilization of the facilities of this plant, arrangements have been entered into whereby all available wharfage facilities in excess of the small amount required for military purposes have been made available and are now being actively absorbed in handling commercial traffic passing through the port of Charleston. A considerable amount of the storage warehouse facilities of this terminal are being utilized for the temporary storage of ordnance material; its occupancy, however, is only temporary.

While under the existing policy, title to this property will, as a measure of national defense, remain with the government, it is probable that the present degree of commercial utilization will soon be extended to include the entire facilities of the plant, both for the transfer of cargo on and off ship, and for storage purposes.

HEADHOUSES AND DOCK AT CHARLESTON TERMINAL

Book Reviews

Ships' Boats, by Ernest W. Blocksidge; cloth; 500 pages, 5½ x 8½ inches; published by Longmans, Green & Co., and furnished by THE MARINE REVIEW for $9.

Qualities, construction and equipment of ships' boats together with appliances for launching them are discussed at length. The author brings to his subject a specialized knowledge, being a ship surveyor of Lloyd's, and former ship surveyor to the marine department of the British board of trade and a lecturer on naval architecture. The book was prepared in order to make available complete information on the equipment of life saving appliances on cargo and passenger vessels. Originally undertaken while the author resided in Great Britain, the work was completed after professional duties brought him to the United States

Boats of a great variety of types are considered with brief analyses of their form, stability and strength. Timbers suitable for small boat construction are considered and an outline of the equipment necessary for a boat yard is presented. Various types of open life boats are discussed, construction of each design being analyzed and explained at length. Complete illustrations are given to illustrate the text. The section of the book on boats is completed with a survey of power, nested, surf and steel boats.

Half of the book is devoted to the equipment of ships' boats and the means for launching them. A number of tables of value to the boat builder are included.

The book is a complete study of the important question of life boats and as such its appeal extends beyond the field of the boat builders alone. Safety of life at sea depends in such a large degree upon the quality of life boats and the assurance of their successful launching in times of emergency, that a broader appreciation of small boat construction and handling is essential. This appreciation the author has aroused by an unusually complete analysis of his subject.

Marine Insurance, by William D. Winter; cloth; 433 pages, 5½ x 8 inches; published by the McGraw-Hill Book Co., Inc., and furnished by THE MARINE REVIEW for $3.50.

The author is a lecturer on marine insurance, New York university, and in the present volume he has rewritten a number of lectures and arranged them for publication in book form. He points to the marvelous growth of our overseas trade wherein shipping, banking and insurance have expanded substantially.

The forepart of the book is devoted to a historical introduction which interestingly traces the growth of this branch of insurance from the most remote times. The part Lloyds played in the development of marine insurance is covered fully. This is followed by a chapter devoted to physical geography in its relation to

marine insurance wherein the natural risks to which vessels are subjected are fully treated.

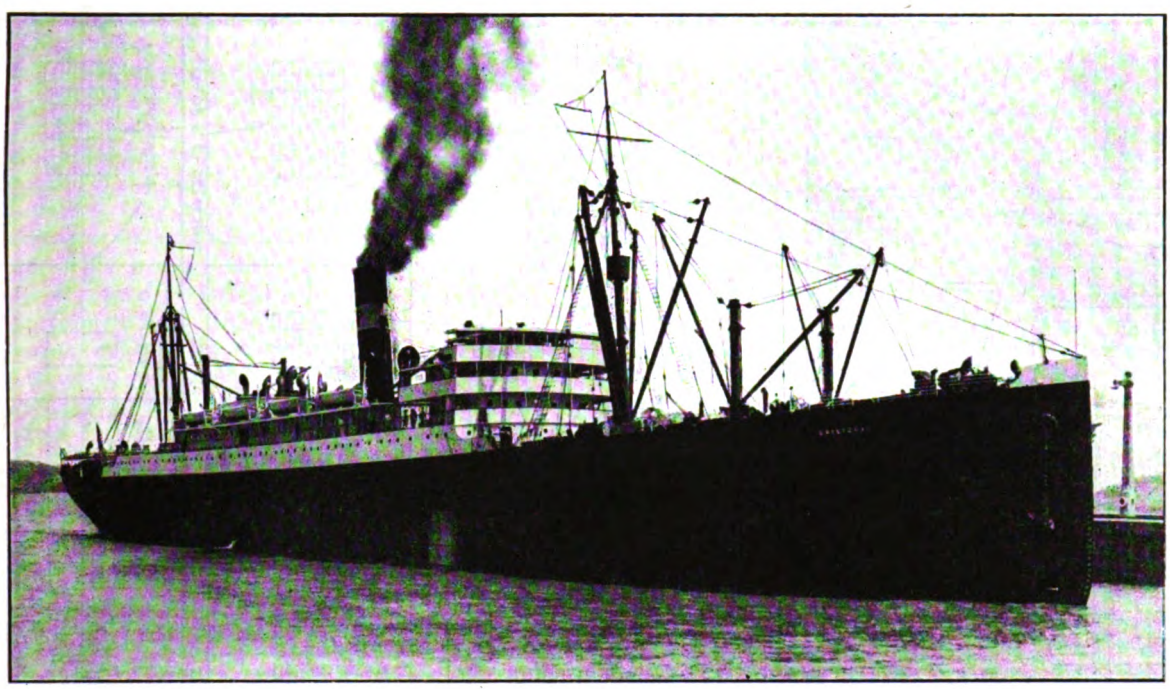
A chapter is devoted to commercial geography. This treats such subjects as the demand for goods, the opening of new trade routes, types of trade, charters, trading in bills of exchange, etc. Under ships and shipbuilding are described the materials used in vessel construction. Freeboard and load lines are fully explained in this chapter.

The ship as a cargo carrier forms the subject of an interesting chapter wherein stresses and strains are fully described. The proper way to stow ballast and the materials used for this purpose are set forth. Classification societies and what a class signifies are explained together with the necessity for understanding classification society codes. Underwriters' organizations, salvage associations, the measurement of ships, etc., are among other subjects treated in this section.

An explanation of a marine insurance contract is given followed by a full description of types of marine insurance policies. Specific cargo risks are exhaustively treated, especial attention being given to the overloading of vessels and fire hazards. Problems involved in damage caused to goods in transit are explained, while the discussion of refrigerated goods and dressed meats gives many interesting facts. On the subject of hull insurance, the author explains the several classes into which this is divided and explains the value of vessels, machinery claims, collision liability, etc.

Freight insurance, war insurance and reinsurance are next taken up, together with losses, general averages, and total losses. The functions of brokers and mutual insurance companies are pointed out. Several appendices are included which show forms and agreements.

Written by one who understands his subject thoroughly, this book should prove of value to vessel owners, masters and operators and others interested in shipping. The author uses clear language in discussing a subject which is not generally understood. In view of the efforts to stimulate American marine insurance, the book is timely and well worth reading.



CRISTOBAL REBUILT AND READY FOR SERVICE

Rebuild Big Steamer at Panama

Repairs involving almost complete reconstruction have been carried out at the Balboa shops of the Panama canal on the steamship CRISTOBAL. The vessel has been owned by the Panama authorities for 11 years and was in hard service both during the period of canal construction and during the war. In fitting her for economical operation at the present time, extensive overhauling was decided upon.

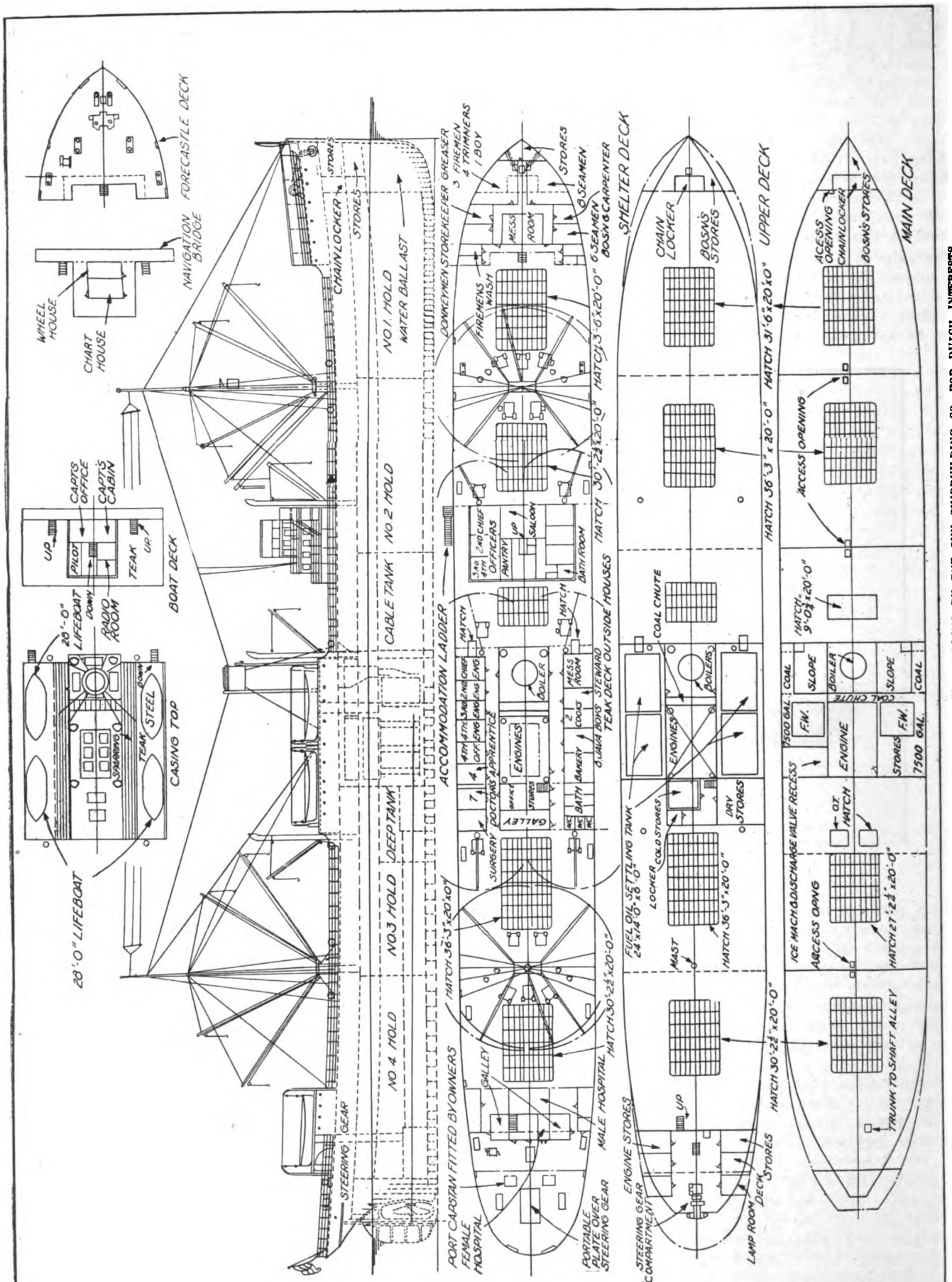
The CRISTOBAL, 9332 gross tons, 489 feet 6 inches in length by 58 feet beam and 28 feet 10 inches depth, was built in 1902 at Sparrows Point, Md., and purchased in 1909 by the Panama Railroad Steamship line for $850,000. Today her value is estimated as around $3,000,000.

She was used as a cement carrier and passenger ship during the period of construction of the locks and earlier terminal piers of the canal. During the war she was for some time in the nitrate trade, from Chile. In May, 1919, she was sent to Balboa shops for virtual rebuilding.

Every part that was worn was replaced, from hull plates to railing around the deck. The system of coal burning boilers was changed to oil burners, with a general reconstruction of the bunker and boiler spaces. New boilers were installed, and all worn parts of the engines, main and auxiliary, replaced with new. The capacity for cold storage was increased to over 13,000 cubic feet. Passenger accommodations were renovated and increased; she can now accommodate 130 first class and 52 steerage passengers.

New smoking room, social hall, and dining room were built, and finished throughout in "caoba blanca" or the light mahogany of Panama. This is a kind of wood never used prior to 1917 and unknown commercially, outside of the local uses on the Panama isthmus. Practically all of the ship above the main deck is entirely new.

The accompanying illustration shows the CRISTOBAL leaving Pedro Miguel lock on her way through the canal on April 13. The vessel had passed her trial trip in the bay of Panama successfully and is now in the service of the Panama Railroad Steamship line between New York and the canal zone.



OUTBOARD PROFILE AND DECK PLANS OF 11,500-TON CARGO VESSEL BUILDING BY THE SUN SHIPBUILDING CO. FOR DUTCH INTERESTS

Builds Ship for Foreign Buyer

Chester Yard Is Completing Large Freighter for Dutch Company—First Foreign Contract Placed Since Armistice

THE vessel shown in the accompanying illustration is a 11,590 deadweight ton freighter, the SALATIGA, being built by the Sun Shipbuilding Co., Chester, Pa., for the Rotterdam Lloyd's, Rotterdam, Holland. She is one of the first foreign contracts let in this country since the armistice. This ship is designed for use in trade with the East and was launched during April. Being for foreign register, the boat will be classified by Lloyd's. The vessel will be of the closed shelter deck, single screw type, with transverse framing. She will have three complete decks, and will have an inner bottom for fuel oil running the full length of the ship between the peak bulkheads. The boat will have eight transverse watertight bulkheads, four cargo holds, a deep tank and a cable tank at the after end of No. 2 hold. A forecastle deck will be fitted. The measurements of the vessel are 435 feet between perpendiculars, 451 feet overall, 57 feet 6 inches molded beam, 38 feet molded depth to shelter deck, and 28 feet 1½ inches loaded draft. Her contract speed is 11 knots.

Provides Large Hatches

Five large hatches have been planned, all being 20 feet wide, and varying in length from 15 feet 1¼ inches to 36 feet 3 inches. The vessel will have a fore and main mast, each fitted with five 7-ton steel booms with a 30-ton boom at the foremast. There will be four derrick posts, each fitted with one 2-ton boom. The foremast will be served by five winches, including two of the compound geared type. In addition, there will be five winches at the main mast and one at each derrick post.

Accommodations for the captain and deck officers will be in a house amidships between No. 2 and No. 3 hatches at the shelter deck level. This house will contain the main saloon and accommodations for three passengers. The captain, pilot and radio room will be located in a separate house on the bridge deck with a wheelhouse and chart room above. Abreast of the engine and boiler casing between No. 3 and No. 4 hatches in wing houses on the shelter deck will be located the engineers, doctors, surgeon's examination room, stewards, cooks, etc. The ship's galley and storeroom, with ship's office, will be located immediately aft of the engine casing on the shelter deck. Immediately below on the upper deck will be located the cold storage and galley storerooms. Firemen, sailors and petty officers will be berthed in the forecastle forward.

As the boat, when east of Suez, will frequently carry pilgrims, special arrangements for their accommodation have been provided. These are carried between the upper and shelter decks aft. Aft of No. 5 hatch on the shelter deck will be a house containing two galleys, male and female hospital, with water closets and washroom in wing houses abreast of these.

The ship will depend upon natural ventilation throughout, special care having been taken in its construction to provide air for the pilgrim space on the upper deck and for the crew in the forecastle. Eight 30-foot lifeboats to be carried in Welin davits on the midship wing and after deckhouses will be equipped according to Dutch law.

The SALATIGA's power unit will consist of a vertical, inverted triple expansion engine with cylinders 27 x 45½ x 76 inches diameter and 51-inch stroke. The engine will be equipped with an independent condenser and air pump. The ship will have three single-ended Scotch boilers, the inside diameter measuring 15 feet 10 inches by 11 feet 11¼ inches between heads. Three furnaces will be installed. The working steam pressure will be 190 pounds. The boat will be oil burning with forced draft system of the hot air type. The steering gear will be placed aft on the upper deck. It will be of the right-and-left hand screw type with telemotor control and hand emergency steering wheels.

The electric plant will consist of two 15-kilowatt, direct-connected, 110-volt machines. Steam heating will be provided for all quarters. A 2-ton ammonia ice machine with a tank of 200 tons of ice per day capacity will be installed.

In connection with the report that a 9600-ton vessel launched recently at New Orleans was the largest ship ever built south of Newport News, Va., the George A. Fuller Co., Wilmington, N. C., advises that it is building ships of the same size. One ship had been completed and delivered and four others sent into the water prior to the launching at the Louisiana port.

Test Big Submarine

What is said to be one of the finest submarines ever delivered to the navy is the A.A.-1 which recently proved up under government tests in the New London, Conn., harbor. The vessel was built by the Electric Boat Co., and is by far the largest and fastest United States submarine. She is 270 feet in overall length with a surface displacement of 1150 tons. The A.A.-1 is known as a fleet submarine because she develops a speed great enough to accompany the battle fleet. In her trials a speed of 20.92 knots was made. Fear has been expressed by naval experts that the increased size and speed of the submarine would mean a loss of the excellent submerged qualities posseseed by the smaller boats. This fear has been realized in the case of the K. class of submarine of the British government, which developed a speed in the neighborhood of 23 knots on the surface but have an inferior submerged quality and an exceedingly short radius of action. The demonstration of the A.A.-1 shows that this is not necessarily the case in a large and high-speed submarine, for nothing has been sacrificed in the matter of underwater qualities or radius of action. The vessel is equipped with diesel engines built by the New London Ship & Engine Co., Groton, Conn., which develop 4400 horsepower.

New Danube Yard

Ship repair and construction work will be undertaken by a new Rumanian company just organized. This firm will be known as the Shipyard "Braila" and has begun the construction of a plant at Braila, Rumania, on the Danube river. The company is capitalized at $3,000,000, of which $600,000 has been issued. Founders of the company include the bank of Messrs. Marmorosch, Blank & Co., Dunarka River Navigation Co., Maritima Steamship Co., Cometa oil refinery and the Cantacuzino Portland cement works. The officers are Gen. G. Cantacuzino, president, and Consul Victor B. Mendl, vice president.

Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

WALTER C. MUELLER, general traffic manager of the Submarine Boat Corp., HARRY LLOYD, general comptroller, and A. S. GRANZEN, have been made vice president in charge of traffic, comptroller, and general traffic manager respectively of the Transmarine Shipping Corp., a subsidiary of the former company.

* * *

E. K. HOWARD has resigned as manager of M. H. Tracy & Co.'s New Orleans office to join the staff of the Pacific Mail Steamship Co., San Francisco. He was formerly connected with the Pacific coast and Far East districts of the division of operations of the shipping board.

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J. H. NOBLE resigned recently from the Export Steamship Corp., New York, to become affiliated with the Judson Freight Forwarding Co. T. D. SAUL, formerly with the Oriental Navigation Co. and the Export Steamship Corp. has been appointed assistant to the Chicago manager of the Judson company.

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S. GEORGE TATE has become foreign traffic manager of A. V. Berner & Co., New York. Formerly Mr. Tate was vice president of the Atpac Forwarding Corp. and assistant traffic manager of G. W. Sheldon & Co.

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L. L. BATES, foreign freight agent of the Pacific Steamship Co., Seattle, recently attended a meeting of shipping men in New York, the object of which was the organization of a rate conference of all the important maritime districts of the country.

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CARL SUNDE, president of the Sunde & d'Evers Co., Seattle, accompanied by his family, has started on a six months' tour of Europe.

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J. C. FRANCESCONI, president of the brokerage firm of J. C. Francesconi, New York and Chicago, recently made a trip to Seattle to investigate market conditions, particularly in connection with Oriental oils.

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CAPT. T. IRISAWA, who began his career as a deck boy and is now master of the liner FUSHIMI MARU of the Nippon Yusen Kaisha, which sailed recently for ports in the Orient, is to accept a shore berth when the vessel reaches Japan.

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JOSEPH H. DEFREES, Chicago, has been elected president of the chamber of commerce of the United States, succeeding HOMER L. FERGUSON, president of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

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EDMUND J. DOWD, Sea Carriers, Inc., CHRISTIAN EDLICH, Amalgamated Paint Co., FRED C. OGG, J. & E. Wilson, Ltd., and EDWARD S. TOWNSEND, Vaughn Stevedoring Co., Inc., have been elected members of the Maritime association, New York.

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W. LESLIE COMYN is president of W. L. Comyn & Co., San Francisco, recently incorporated, which is to act as agent for both the Pacific Motorship Co. and the Pacific Freighters Co. R. J. RINGWOOD is president of the Pacific Motorship Co. and the Pacific Freighters Co.

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VICTOR T. NOONAN, formerly safety engineer at the Fore River, Mass., plant of the Bethlehem Shipbuilding Corp., has become a public consulting engineer on accident prevention in industry.

* * *

CAPT. CLARENCE C. DECKER, Southport, Me., has been given command of the 10,000-ton liner POWHATAN, ex-HAMBURG. The appointment was made by the United States shipping board. Captain Decker has had long experience in coastwise shipping.

* * *

MAJ. GEN. WILLIAM M. BLACK, who retired from the army last October, has resigned as an advisory engineer with the shipping board because of the ruling by the treasury department that the board cannot pay the expenses of retired army and navy officers serving with it. General Black was formerly in charge of the engineers' corps of the war department.

* * *

Rear Admiral SAMUEL S. ROBINSON, commandant of the Charlestown navy yard, Charlestown, Mass., is one of the nine officers of that rank to receive a permanent promotion. The others are JOSIAH S. MCKEAN, NEWTON A. MCCULLY, ANDREW T. LONG, THOMAS WASHINGTON, GUY H. BURRAGE, ASHLEY H. ROBERTSON, CHARLES F. HUGHES and HENRY A. WILEY. Rear Admiral Washington is the present chief of operations. President Wilson approved the promotions on May 23.

* * *

HENRY WRIGHT, who as gunner on the flagship HARTFORD helped lash Admiral Farragut to the mast of his ship in the battle of Mobile bay, recently died in Springfield, Mass. He was 74 years old, having joined the navy when only 16 years of age.

* * *

GEORGE POWELL, president of the Oregon-Pacific Co., has been appointed Portland, Oreg., agent for the Toyo Kisen Kaisha, a powerful Japanese line which has inaugurated service between Portland and Japan.

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CAPT. FRANK E. FERRIS has been appointed special commissioner of the United States shipping board and the Emergency Fleet corporation with headquarters at 8 Grosvenor Gardens, London, Eng., in place of Capt. E. C. Tobey resigned.

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WILLIAM H. EASTON, of the department of publicity of the Westinghouse Electric & Mfg. Co., has been placed in charge of the publicity work of that company's marine department.

* * *

LYNN R. RUTTER has been appointed assistant director of operations in charge of personnel, of the shipping board, succeeding George Eggers, resigned. Mr. Rutter is a graduate of Princeton university and Northwestern University of Law. During the war he was a lieutenant commander in the navy.

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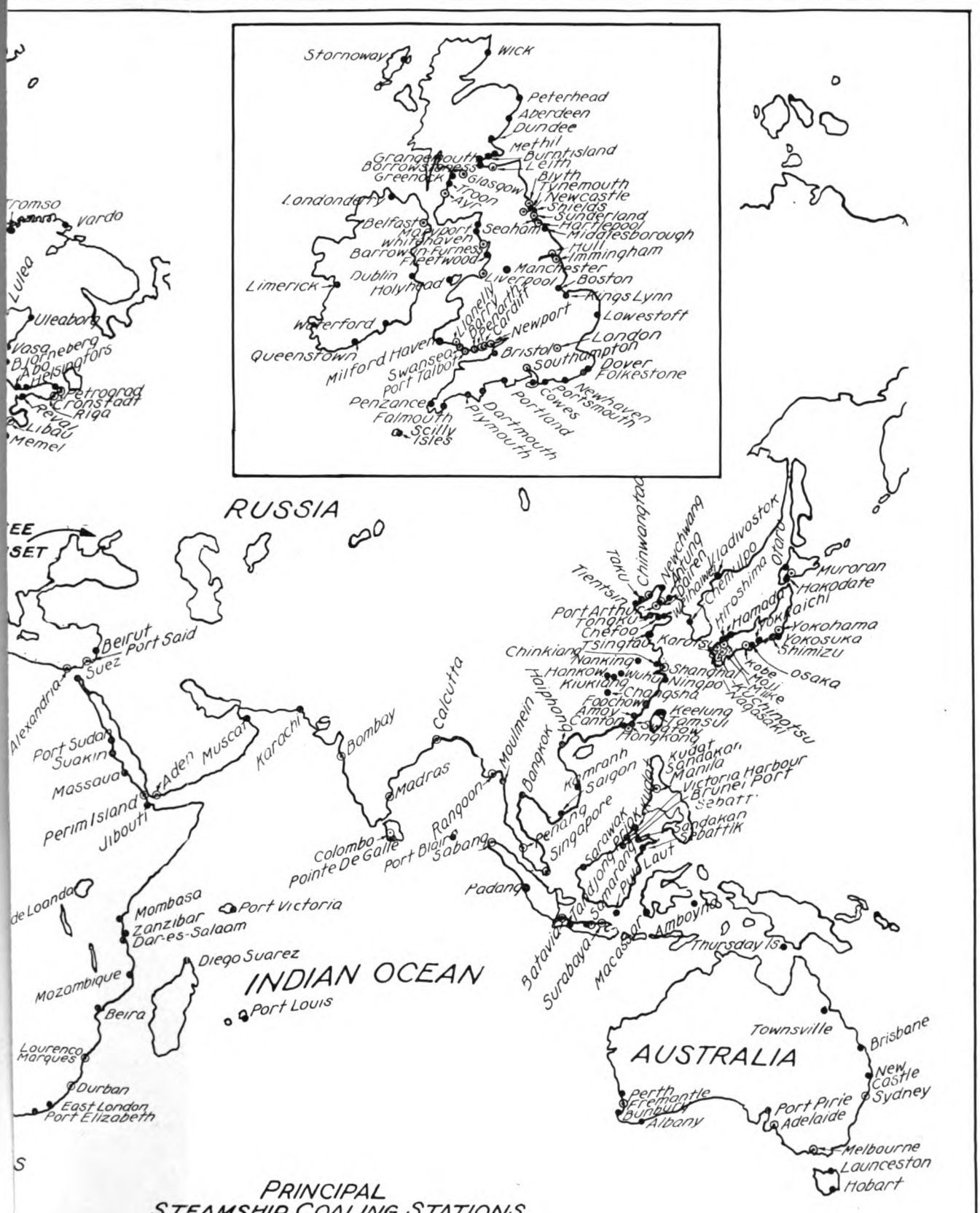
ARTHUR BRYS, head of the Lloyd Royal Belge, has been elected senator from the Antwerp district over the socialist candidate and party leader. This event is regarded in Belgium as an indication that radicalism is on the decline in Europe. The Lloyd Royal Belge, the largest steamship line in Belgium, has grown from less than 10 vessels at the signing of the armistice to 84 [illegible] the management of M. Brys.

cial Maps of Important Districts



PRINCIPAL
STEAMSHIP COALING STATIONS
OF THE WORLD

⊙ Indicates Principal Stations

Marine News in a Personal Way

Intimate Gossip About What Leaders in the Maritime World Are Doing

HBIRCHARD TAYLOR, vice president of the William Cramp & Sons Ship & Engine Building Co., Philadelphia, was elected president of the Atlantic Coast Shipbuilders' association at its annual meeting held on May 10 in Philadelphia. F. P. PALEN, vice president of the Newport News Shipbuilding & Dry Dock Co., was elected vice president and W. T. SMITH, vice president of the Merchant Shipbuilding Corp., treasurer. The administrative council consists of: JOSEPH W. POWELL, E. C. BENNETT, J. HARRY MULL, M. A. NEELAND, W. T. SMITH, S. M. HENRY, F. P. PALEN, H. L. BRITTAIN, W. G. COXE.

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WILLIAM F. TAYLOR has been appointed president of the Export Transportation Co., Baltimore. Mr. Taylor recently resigned as assistant director of operations of the shipping board.

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R. E. WELLS has resigned as staff assistant to Captain Foley, director of operations of the shipping board. He will become manager of the foreign operating and traffic department of the Georges Creek Steamship Co., New York. The resignation took effect June 15, and Mr. Wells now is visiting the foreign offices of the Georges company, the inspection trip requiring about four months.

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W. F. DUNNING, executive assistant to Robert L. Hague, of the shipping board, has been ordered to London to become assistant to Capt. Frank Ferris, who succeeds Captain Tobey, as foreign representative of the shipping board.

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UMETARO HASHIMOTO, head of the Asano interests in the United States, with offices in New York, attended the seamen's congress held in Genoa, Italy, on June 15, in the capacity of advisor to the Japanese delegation.

* * *

EDWARD J. DONEGAN, secretary-treasurer of the National Dry Dock & Repair Co., Staten Island, N. Y., recently returned from a business trip to Great Britain.

* * *

A. B. and A. C. POUCH, proprietors of the Pouch terminals, Staten Island, N. Y., recently sailed for Europe where they will investigate modern port facilities of the principal ports.

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FRANCIS P. MCGOVERN, general counsel of the Emergency Fleet corporation since last January, has resigned and expects to engage in the practice of law in Milwaukee. Since his association with the corporation, Mr. McGovern has reorganized the claims department and established the principles of law

JAMES REED
Former Commander, Construction Corps, U. S. N., Now Assistant General Manager, Los Angeles Shipbuilding & Dry Dock Co.

and practice for the settlement of claims.

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ROLF HOLTVEDT, affiliated with the Kerr Chartering Co. for the past two years, has resigned and will shortly take charge of the chartering business of the United Transportation Co., New York. Previous to his connection with the Kerr company, he was with Hannevig & Johnsen.

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RALPH MITCHELL has been appointed manager of the Buffalo Steamship Co., Cleveland, succeeding his father, the late Capt. John Mitchell.

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FRANK M. WILLIAMS, state engineer, New York, is on the committee in charge of the entertainment and inspection tour of 30 Swiss engineers and business men who will arrive in New York soon to inspect the barge canal between Waterford and Little Falls.

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E. M. HERR, president of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., was recently decorated with the order of the rising sun by the emperor of Japan.

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CAPT. REGINALD W. BELKNAP, formerly in command of the battleship DELAWARE, has been assigned to the command the Squantum, Mass., destroyer plant and the government dock in South Boston.

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J. L. RAY, formerly manager Western Electric Co., Pittsburgh, has been transferred to the New York office as power apparatus sales manager in the general sales department.

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BERNARD JOHNSON, connected with the Cleveland-Cliffs Iron Co. for 18 years, has been appointed permanent agent in Escanaba, Mich. He will have charge of the dispatching and loading of the company's vessels there.

* * *

ROY S. MAC ELWEE, New York, assistant director of the bureau of foreign and domestic commerce, has been confirmed by the senate to be director of the bureau to succeed Philip B Kennedy whose resignation becomes effective July 1. Mr. Mac Elwee received a large part of his education in Germany and spent a few years there in business. He was at Hamburg at the time the war broke out. Upon returning to the United States he joined the teaching staff of the Columbia university as lecturer in economics and foreign trade. He entered the bureau of foreign and domestic commerce from the federal board of vocational education and is the author of *Ports and Terminal Facilities* and a number of pamphlets on foreign subjects.

* * *

H. M. GRIGGS, manager of the ore and coal exchange, Cleveland, has been appointed director of the movement of lake coal and ore to the interior furnaces, so as to effect the greatest economy and efficiency in car supply.

Bits From the Log of Progress

Events of Interest to Those Engaged in Operating, Constructing and Outfitting Yards and Ships

THE HULLS of two wooden ships, ordered by the shipping board from the Traylor Shipbuilding Co., 75 per cent completed, are to be burned on the ways this summer as it was found to be impossible to salvage the lumber. The material in the ways can be saved and will be used in a plant being built by the Traylor Engineering & Mfg. Co. on the site of the former shipyard. The Traylor yard is credited with completing one wooden ship a month after it had begun to operate.

* * *

A LUNCHEON, celebrating the inauguration of a regular coastwise service between Philadelphia and the Pacific coast, was recently given to representatives of shipping interests by Charles E. Ware, president of the North Atlantic & Western Steamship Co., aboard the steamer ARTIGAS, the first boat to enter the trade. Since the war there had been no regular coastwise service between Philadelphia and the Pacific coast.

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THE MARYLAND STEAMSHIP Co., recently incorporated in Baltimore with a capital of $500,000, will do a general shipping business between Philadelphia and European ports. Megee, Steer & Co., Philadelphia, will be managers and operators of the new steamship company. The fleet will consist of ten 7500-ton freighters, similar to those built at Hog Island.

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WHAT IS SAID to be the largest boiler ever built in the port of New York was recently completed in the Staten Island Shipbuilding Co.'s boiler shop. It is a 115-ton, double ended 8-fire, Scotch boiler, 15 feet 3 inches in diameter, 22 feet long, and has a heating surface of 5245 square feet. It was constructed for the EL SOL.

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ANNOUNCEMENT HAS been made that the United States Mail Steamship Co. has chartered 15 of the best of the former German steamers. The company will inaugurate a passenger and freight service between Boston and Bremen and has arranged with the North German Lloyd Steamship Co. for the use of its terminals at Bremen. The France & Canada Steamship Co., which has operated a line from Boston to France, is back of the new company.

* * *

WOODEN SHIPS belonging to the shipping board, with defects entailing too great an expense in operation, have been ordered tied up along the Atlantic coast. At New York, 36 are to be tied up under managing caretakers, 16 at Norfolk, nine at Philadelphia, two at Boston, three at New Orleans, and three at Baltimore.

* * *

SHORTAGE OF men is said to be the reason why the navy department has ordered the retirement of eight ships. Six are battleships, the LOUISIANA, VERMONT, VIRGINIA, NEW JERSEY, NEBRASKA and GEORGIA; two are armored cruisers, the PUEBLO and the HUNTINGTON.

* * *

THE SUN SHIPBUILDING Co., Chester, Pa., has received a contract from the Norwegian American line for a 10,600-ton tanker. The vessel will be 430 feet long with 59 feet beam and 33 feet 3 inches depth. She will be equipped with triple expansion engines and Scotch boilers and will be built on the Isherwood system. She will have a speed of 10½ knots with a consumption of 30 tons of fuel oil daily.

* * *

THE RADIO CORP. of America, New York, whose stations were released from government service on March 1, has put a high power wireless circuit for commercial use to Norway, Sweden, Denmark, and Finland into operation. The stations are of the duplex type, sending and receiving messages simultaneously. The corporation has already established two transoceanic circuits from San Francisco to Hawaii and Japan, and from New York to Great Britain.

* * *

THE FORE RIVER PLANT of the Bethlehem Shipbuilding Corp., has completed its destroyer contract, amounting to over $100,000,000. The destroyer OSBORNE, the last of the 71 destroyers built at the Squantum works, was delivered to the United States navy yard at Charlestown on May 17. From the beginning of its destroyer program, started in June, 1917, the yard set a series of records. The first 36 destroyers were built at Quincy and were delivered in 27 months and 5 days, where, heretofore, it had taken 26 months to build one such vessel. The MAHAN was delivered to the navy in 174 days from the time the keel was laid. Fourteen boats built at the Quincy works saw service abroad. At the call for increased production, the Squantum works were started in October, 1917, to build 35 destroyers. Here the REID was completely built and delivered in 45½ working days and set the world's record in naval construction. Trial trips were also carried out rapidly, the MOODY, successfully finishing every test, including the 4-hour run, between 7:06 a. m. and 1:29 p. m.

* * *

THE SPIRIT OF adventure is luring the little schooner CHUKOTSK, belonging to the Hibbard-Swenson Co., Seattle, to the Kolyma river, Arctic Siberia, where no trader has been for three years and where it is said that the people have run out of everything, even matches. The CHUKOTSK set sail on May 3 and took the inside passage to Cape Spencer, thence across the Gulf of Alaska to Unimak pass and then to East Cape in the Arctic. From there she will return to Nome to prepare for the daring voyage to the Kolyma. By the northward route the journey will exceed 4000 miles. The company on board numbers 10 picked men, with Captain Weeding in command and B. N. Critchlow as chief engineer. The CHUKOTSK, formerly the halibut schooner TYEE, is equipped with 140-horsepower gas engine that gives a speed of 8 knots, and is recognized as a fine sailer. She is the first vessel, outside of Russian government ships, that has attempted to reach the Kolyma river and to return to Seattle the same season.

* * *

SLOOP MARAYA, a 90-foot auxiliary, sailed recently for Lima, Peru, in charge of Capt. Alfred Gannell and a crew of 10 men supplied by the Knights of Columbus employment service of New York. The craft is to be turned over to its new owner, Senor Carlos Valencia. The voyage will take about three months, with stop overs at the West Indies and the Panama canal. The men are all former navy veterans and receive $200 per month.

Bits From the Log of Progress

Events of Interest to Those Engaged in Operating, Constructing and Outfitting Yards and Ships

THE AMERICAN BUREAU OF SHIPPING has determined upon a policy of expansion abroad and within the next few months will establish surveyors in all the principal European ports, except those of the United Kingdom and Italy because of agreements with the British Corp. and the Italian Classification society. Commodore E. P. Berthoff, vice president of the American society, has sailed for Europe to make a personal inspection of conditions in Germany, France, Spain, Portugal, and the Baltic countries with a view to locating foreign offices in these countries. Steps already have been taken toward opening an exclusive office in Hamburg.

* * *

AN ABUNDANCE of cargo space on vessels from Japan and the release of many ships from old charters in the near future is expected to produce another slump in transpacific freight rates. Rates from Japan have already declined due to the number of shipping board vessels built in Japan which have accepted cargo as low as $3 a ton for the initial run to America, to the falling off in outward freight, and to the number of ships placed in the transpacific service by the shipping board.

* * *

THE SHIPPING BOARD has allocated 12 passenger liners to the Pacific coast: five to the Pacific Mail Steamship Co., two to the Matson Navigation Co., and five to the Pacific Steamship Co.

* * *

A DIVIDEND of 200 per cent has been declared by the Crowell & Thurlow Steamship Co., builder and operator of vessels for coastwise and foreign trade, Boston, and capitalization has been increased from $1,000,000 to $3,000,000.

* * *

REGULAR FREIGHT service will be established from Seattle down the North and South American coasts by the Pacific-Argentine-Brazil Steamship line. The homeward voyage will be made by way of Punta Arenas and the east coast of South America, through the Panama canal.

* * *

PREMIUMS FOR passenger accommodations from Japan to America are advertised almost daily in the English papers of Japan and have run as high as $300 in gold, so scarce are passage facilities. Prospective travelers are glad to get transportation in any kind of boat—cargo or passenger. All accommodations are booked full until late in the fall and some companies are booked full until the first of the year.

* * *

THE STEEL freighter BONDOWOSO, owned by the Java, China, Japan Steamship line, a subsidiary of the General Steamship Corp., has established a route between Seattle and Java for vessels of the company engaged in the Dutch East Indies trade.

* * *

INCREASED INTEREST in the problem of fuel economy is shown by a statement made by the Diamond Power Specialty Co., Detroit, that during the first three months of this year it received orders to equip a total of 635,200 horsepower of boilers and economizers with mechanical soot blowers.

* * *

SERVICE BETWEEN the Atlantic and Pacific coasts of the United States will be re-established soon by the Luckenbach Steamship Co., Inc. When the Panama canal was opened it was used extensively by the Luckenbach company but later its vessels were transferred to the transatlantic trade.

* * *

THE TRANSATLANTICA Italiana and Societa Nazionale di Navigazione, Genoa, are to inaugurate a passenger service over the route between Genoa and Valparaiso by way of the Panama canal. Six steamers will be used in this service.

* * *

THE SHIPPING BOARD has decided to establish a new and separate district to be known as the South Atlantic district with headquarters at Savannah, Ga.

* * *

INTEREST ATTACHES to the construction of the CUBORE, the first motorship built at the Bethlehem Shipbuilding Corp., Ltd., Fore River plant, Quincy, Mass. The original CUBORE was torpedoed while in army service as a transport. The new ship built for the Bethlehem Steel Co., is 468 feet over all, 57-foot beam, 27-foot draft, 10 knots per hour loaded, and 11,400 tons deadweight. Her motive power will be derived from a fuel oil diesel engine of 2500 horsepower. In addition to the usual ballast tanks, this ship will have side tanks which reach from the forward engine room to the collision bulkheads and from the base line to a height of 26 feet. To enable the ship to load in five and one-half hours, six hatches take up most of the deck space. These hatches range in size from 26 feet by 33 feet to 37 feet by 39 feet. Each hatch has a two-piece cover built up of plate and angle and opened and closed with steam winches.

* * *

AMERICAN SHIPPING at Constantinople made remarkable progress during the year 1919, a total of approximately 57 vessels, two of them making return trips, having called there. The steamer SUSANA, which entered that port on May 9, 1919, bound for Batum, is the first American-owned merchant steamer, registered in the United States and flying the American flag that ever called at Constantinople. Between 1878 and 1910 no ship of American registry except one steam yacht, entered the port of Constantinople. The records of the American consulate general lists four pleasure yachts, a few oil barges, and the vessels of the American Archipelago Steamship Co., a Greek-American company, owned in Smyrna but flying the American flag, from 1910 to 1914. Five American Archipelago ships and one oil tanker called in 1915. No other American ship registered from 1915 until 1919.

* * *

S TYPE SUBMARINES built at the Fore River plant of the Bethlehem Shipbuilding Corp. are often built at some distance from the river and moving them to the launching ways is a difficult operation. A runway with a grade of ⅛-inch to each foot is built under the submarine, across the yard to the final location for the launching. The vessel is then lowered into the greased runways and wire cables from two donkey steam engines are attached to the boat. Care must be exercised that the boat is moved slowly, 15 minutes usually being required to transfer it into position for launching.

Activities in the Marine Field

Latest News From Ships and Shipyards

Lake Traffic Conditions Improve

BY H. C. MEADE

IMPROVEMENT in lake traffic conditions developed early in June but is necessarily slow as it depends upon the coal and car supply which continues far short of the demand. Coal receipts at Duluth and Superior up to June 1 showed a big slump compared with the same period last year. Receipts of bituminous coal were 276,400 tons, which is 1,264,200 tons less than they were in 1919. Anthracite receipts were 174,500 tons, showing a loss of 69,900 tons. Iron ore shipments for May greatly exceeded expectations in view of the fact that vessels had been handicapped by the scarcity of coal and by the nation-wide transportation congestion. The boats carried 360,744 tons more than in May, 1919, when total shipments were 6,615,341 tons. Orders booked before the opening of navigation were for about 61,000,000 tons for the season. At the opening of June, 11 per cent of this tonnage had been delivered. Final arrangements are to be made soon for the re-establishment of the system of pooling coal in the lake trade on the 1918 basis, as suggested by the interstate commerce commission, to expedite the movement of freight cars. Passenger trade is active with accommodations in demand. Package freight service is benefiting from the inability of the railroads to furnish an adequate supply of cars to the shippers. Automobile trade is gaining in importance as shown by the fact that nine boats are to be engaged exclusively in carrying automobiles during the season. Heavy fogs have been responsible for numerous vessels going ashore. The proposal for a deep waterway between the lakes and the Atlantic is being fostered by prominent men who will meet at Detroit on July 22-24. Lake yards are winding up government work. They are now building four bulk freighters and several ocean-going vessels.

* * *

The steamer E. A. UHRIG, which grounded at Cheboygan point recently, damaging 11 plates, was placed in dry-dock at Ashtabula, O., for repairs.

* * *

The steamer WILLIAM NOTTINGHAM punched two holes in her No. 1 port tank recently on what is believed to have been the anchor lost by the steamer SIR THOMAS SHAUGHNESSY in Buffalo harbor. She began to leak rapidly and remained in port for repairs.

* * *

The steamer RICHLAND QUEEN has been chartered for the season by Buffalo interests to engage in automobile trade between Lake Michigan and Lake Erie ports.

* * *

The steamer CITY OF BUFFALO of the C. & B. line opened the passenger season between Cleveland and Buffalo on May 15. The steamer SEEANDBEE was placed on the run June 5, which is about 10 days earlier than usual.

* * *

The steamer R. R. RICHARDSON was damaged by fire at Lorain, O., recently.

* * *

Steamer B. F. BERRY grounded at False Presque Isle, Lake Huron, recently and sprung a leak. She was docked at Cleveland for repairs.

* * *

Tons of freight have been moved by boat from Erie, Pa., to Detroit under a system inaugurated by the board of commerce to relieve freight traffic at railroad terminals. The Great Lakes Transit Corp.'s freighters were put into this service.

* * *

Capt. David Aurelius died of typhoid fever at his home in Lorain, O., on May 19. He was master of the tug PENNSYLVANIA of the Great Lakes Towing Co.

* * *

The tug MOSHER has been sold by the Great Lakes Towing Co., Cleveland, to the Bronx Towing Co., New York, to be put into coast service.

* * *

Steamer JOHN F. MORROW, formerly the E. N. BREITUNG, will be operated in the Lake Ontario and St. Lawrence trade by Canadian interests which have purchased her recently from the Morrow Steamship Co.

* * *

Heavy fog recently caused the steamer DOUGLAS HOUGHTON of the Pittsburgh Steamship Co. to become stranded on Bruce island, Straits of Mackinac. She was undamaged.

* * *

The steamer SUPERIOR of the Great Lakes Transit Corp. went ashore on Kelly island shoal recently. Necessary repairs were made at Superior, Wis.

* * *

Rate increases for water carriers should be the same as for railroads, according to Levy Mayer of the Great Lakes Transit Corp., in a statement made before the interstate commerce commission. Applications in the interests of water carriers would be filed at the expiration of the railroad testimony, he announced.

* * *

Draft for the Blackwell canal, Buffalo, has been marked up a foot and is now 20 feet, George A. Marr, secretary of the Lake Carriers' association announced recently.

* * *

Coast steamers building at lake yards for the Emergency Fleet corporation will soon be ready for delivery. Only four steamers are being built for lake trade and they will be completed too late to be of much service this season.

* * *

Capt. C. H. Wallace, for 25 years with the Pittsburgh Coal Co., Chicago, is now affiliated with A. F. Mitchell & Son, Chicago.

* * *

The steamer A. E. R. SCHNEIDER, formerly the CHARLES R. VAN HISE, made her trial trip recently and left for Marquette, Mich., with coal. The steamer was cut in two some time ago by the shipping board to be taken to the coast and was later lengthened 96 feet at the Ashtabula, O., yard of the Great Lakes Engineering works. Capt. P. C. Rouvel is master of the SCHNEIDER.

* * *

The steam yacht NAVAJO III, purchased by Sidney Frohman, president of the Hinde & Dauch Paper Co., Sandusky, O., from H. A. Grimwood Jr., Providence, R. I., has arrived from the coast after a 900-mile trip through Narragansett bay, the Harlem and Hudson rivers, the Erie canal, and Lake Erie.

* * *

The passenger steamer QUEBEC grounded off Three Rivers, Que., recently. Her passengers were taken off and tugs were sent to her assistance.

* * *

Some small freighters are still idle and all of them may not be put in commission this season. With coal cargoes scarce and the lumber movement slight, it is not deemed advisable to start them, at the present cost of operation.

* * *

The recommended draft for the Soo river and Lake St. Clair has been marked up 6 inches and is now 20 feet 6 inches.

* * *

Nine freighters will be used in the automobile trade this season. They are the steamers LAKELAND, FELLOWCRAFT, FLEETWOOD, RICHLAND QUEEN, MECOSTA, SPOKANE, ROUMANIA, C. F. BIELMAN and LIVINGSTONE.

* * *

Bids are being solicited by the Great Lakes Engineering works, Detroit, for all of its plants and properties which are for sale. The general conditions of the times are given as the reason

for this step and the company announces its aim to conserve the assets for the stockholders in this way. The properties include the machine shops in Detroit, the shipyard at Ecorse, Mich., and the shipyard at Ashtabula, O.

* * *

Invitations have been sent out by the Detroit board of commerce for the Great Lakes-St. Lawrence Tidewater congress which is to be held in Detroit July 22, 23 and 24. The tentative program includes Senators Townsend, Poindexter and Lenroot; Gen. Lansing H. Beach, chief of the United States engineers; Dr. R. S. MacElwee, chief of the bureau of foreign and domestic commerce; J. W. Shorthill, former secretary of the Western Grain Growers' association; Harry H. Merruck, vice president of the Mississippi Valley association; Julius H. Barnes, former president of the United States Grain Corp.; Gardner S. Williams, consulting engineer; and H. C. Gardner, president of the Great Lakes-St. Lawrence Tidewater association. Several governors and some members of the President's cabinet have been asked to speak.

* * *

Joseph Wolters, who sold his shipyards at Sturgeon Bay, Wis., to the Universal Shipbuilding Co. two years ago, is planning to build a new yard which he expects to have completed next fall. Prominent shipping men are reported to be financially interested in this project.

* * *

The steamer JAMES WATT was badly damaged when she and the barge JOHN FRITZ were stranded on Graham shoal during a recent fog in the straits.

* * *

The Ohio fish and game commission's patrol boat OLIVER H. PERRY was damaged recently by fire. She was towed to Put-in-Bay for repairs.

Up and Down the Pacific Coast

DIFFICULTIES in obtaining fuel in the Orient are handicapping operating officials at the present time. Oil is unusually scarce and shipping board vessels now leaving north Pacific ports for the Far East are carrying coal burning apparatus with them so that coal may be burned on the return voyage. Sufficient oil is taken to steam them across the Pacific but in the Orient the change is made as it is possible to get coal while oil is practically unobtainable even at prohibitive prices. Within the last month several transpacific freighters have been diverted to Honolulu for oil, adding considerably to the expense of the voyage. Advices from the Panama canal report a price of $2.50 per barrel for fuel oil after June 1 at either Cristobal or Balboa.

* * *

Plans are being worked out by the Puget Sound Navigation Co. to send the passenger steamer IROQUOIS back to the Great Lakes. This vessel, with her sister vessel the CHIPPEWA, was purchased at Chicago in 1906 and came to Seattle by the Straits of Magellan. For some time these vessels have been idle at Seattle and negotiations are under way for their sale for excursion runs out of Chicago. The IROQUOIS and CHIPPEWA for about a year were operated by the sea service bureau for training recruits for the merchant marine.

* * *

Delivery of the last wooden steamer constructed in the Portland district for the shipping board was made when the CORONE left the Columbia river to load lumber on Puget sound for Cuba.

* * *

The initial shipment of a heavy movement of phosphate rock through Portland to Japan was made on the freighter LIVERPOOL MARU. This is a new business and large quantities of this fertilizer have been purchased in Idaho. Portland has prepared to handle this additional traffic by building bunkers through which the phosphate rock is handled in bulk.

* * *

Three sections of the Skinner & Eddy wooden drydock, sold to the Moore Shipbuilding Co., at Oakland, Cal., have been successfully towed the 850 miles down the coast. Each section averaged 12 days enroute and arrived without mishap. This feat has been closely watched by shipping experts as it is establishing a new record for unwieldy tows over a long open sea course.

* * *

Deadlocked negotiations between the owners of the schooner SNOW & BURGESS and the underwriters are likely to prolong indefinitely the stay of the aged carrier at Port Townsend. With a chain around the hull to hold her together, the SNOW & BURGESS arrived from Manila in March and her status is still uncertain. The underwriters refuse to take the vessel over on the ground that she was insured on a basis of total loss. The owners do not want the vessel as repairs will likely cost more than the vessel is worth.

* * *

Portland is furnishing heavy tonnage for the liners of the Isthmian line, the STEEL VOYAGER having left the Columbia river with 3500 tons of wheat, 500 tons of flour and 1,750,000 feet of lumber consigned to British ports.

* * *

Sir Richard D. Holt, of Alfred Holt & Co., one of the foremost shipping firms in Great Britain, recently visited Seattle on his return to Liverpool from the Orient. Sir Richard's principal comment is that increased production is necessary in all countries. He asserted that the nation which can get its exports to the waiting markets of the world first will place itself in a preeminent position. He found conditions in the Orient very uncertain.

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On a bid of $48,605, time nine days, Todd Dry Docks, Inc., was awarded the contract for repairing, overhauling and altering the Japanese built steamer EASTERN TEMPEST, which will be delivered to the shipping board.

* * *

E. H. Beazley, managing director of the B. C. Union Steamship Co., and widely known in north Pacific shipping circles, was killed at Vancouver, B. C., by falling 2500 feet from an airplane.

* * *

Last steel contract built in Seattle for the shipping board, the 8800-ton steel carrier WEST MAHWAH, constructed by J. F. Duthie & Co. has had her trials and been delivered. The WEST MAHWAH will inaugurate a new service between Puget sound, New Zealand and Australia under assignment to the General Shipping Corp.

* * *

Five of the fast passenger liners now building for the shipping board have been allocated to the Pacific Steamship Co. and will operate to Siberia, Japan, China and Manila from Seattle. This arrangement places Seattle on a parity with San Francisco which has had an equal number of these new steamers assigned. The first sailing from Seattle is expected to take place in November. It is planned to have sailings for the Far East every three weeks with Vladivostok as the terminal for one steamer every 60 days. This announcement is of great interest to Pacific coast ports as for years foreign lines have dominated the passenger traffic out of these ports.

* * *

Contract for constructing two storage oil tanks, each with a capacity of 250,000 gallons, has been awarded by the port of Seattle. This additional equipment will give the port a storage capacity for bulk oils of 2,100,000 gallons.

* * *

The wooden auxiliary schooner BLAATIND, built at Seattle for Norwegian owners, is riding at anchor under a libel of more than $200,000. Claims for unpaid accounts and for damages in failing to fulfill a charter are in dispute and meantime the vessel is idle.

* * *

Coastwise service on the British Columbia coast has been generally resumed after a strike by sailors which tied up a number of vessels for several days. Higher wages were demanded but the companies generally succeeded in replacing the strikers.

* * *

Completing a round-the-world voyage that speaks volumes for her builders, the shipping board steamer OLEN has returned to the Pacific coast with a fine record for economy. The OLEN was built at Tacoma by the Todd Dry Dock & Shipbuilding Co. Since leaving Portland last December she has circled the globe, going to the Orient,

thence to Straits Settlements, Mediterranean, New York and is now back on the Pacific. It is stated that although she has steamed about 31,000 miles on this course her repair bill has been less than $2500 which is an unusual record.

* * *

Six Chinese-built steamers, each of 10,000 tons, are to come to Seattle for delivery to the shipping board. These vessels were ordered during the war. They will come manned by oriental crews. Alterations to be made on these carriers at Seattle are estimated to cost $1,500,000.

* * *

With five vessels in service and another about ready, the Los Angeles-Pacific Navigation Co., organized two years ago by Los Angeles business men, is developing a notable trade in southern California products with the Orient. On recent trips, gross revenue outward bound of each of the freighters was in excess of $100,000, officials report. The WEST MONTOP, which sailed from Wilmington in January for Japan, China, Singapore and the Philippines, earned $108,703 on the outward voyage. The WEST HIKA in February earned $110,500 on the voyage to oriental ports. The VINITA sailed April 15 and earned $119,084 on her maiden voyage. The company's fourth vessel, the WEST HIXTON, sailed the first of May and earned $122,000 on the outward trip. All of her cargo originated in Los Angeles. Disbursements for each vessel approximate $50,000, it is reported. The WEST HESSELTINE sailed at the end of May and a sixth vessel will be assigned to the company in July, it is anticipated. Fourteen-day sailings are planned as vessels are made available. Rubber cargoes are expected to provide heavy return loads soon.

* * *

Construction of two steamers to cost approximately $4,000,000 each is planned by the Admiral line for operation between Los Angeles, San Francisco and Puget sound, following a futile attempt to secure, first, the steamers GREAT NORTHERN and NORTHERN PACIFIC and second, the steamers, YALE and HARVARD, formerly owned by the company.

* * *

With the development of southern California as a tire manufacturing center and increases in raw rubber shipments from the Far East, some diversion of automobile shipments from Atlantic to Pacific ports is anticipated. John J. Palmer of the foreign sales department of Dodge Bros. is now making a survey of the western ports with this end in view, he states.

* * *

Completion of the $6,000,000 construction and improvement project of the Standard Oil Co. at El Segundo will have an important effect on the oil tanker trade of the Pacific. The plant will have a capacity of 77,400 barrels daily. In addition to 36 stills now in operation, 50 more are to be erected, besides a "cracking" plant and an acid plant.

* * *

The only vessel captured as a prize on the Pacific coast by the navy during the late war was sold in May under libel to Joseph Mesmer for $4200. The vessel is the power schooner ALEXANDER AGASSIZ which, early in the war, was purchased by Miss Maid M. Lochrane, who for a time acted as captain and endeavored to operate the vessel between Mexican west coast ports. United States warships captured the boat off Mazatlan when naval authorities alleged that German plotters in Mexico had secured possession of the ship, planned to throw Miss Lochrane overboard at sea and succor a raider with food and supplies.

* * *

Direct monthly service from Los Angeles to Australia will be inaugurated in August, it is announced by the General Steamship Corp. The first vessel will leave that port Aug. 15.

* * *

The Southwestern Shipbuilding Co. launched its sixteenth steamer since the yard was created in March, 1918, on May 25, when the 8800-ton freighter WEST NOTUS slipped into the channel at Los Angeles harbor.

* * *

Working the pumps night and day, 11 persons facing death on the waterlogged schooner OCEANIA VANCE were saved May 26 when the Standard Oil tanker ASUNCION took the vessel in tow while two United States torpedo boat destroyers raced north from San Diego to rescue the imperiled crew and the wife and two children of the schooner's captain, Charles Saxon. The vessel was loaded with lumber for Sydney, and sailed from San Francisco May 10.

Late News From Atlantic Seaboard

WHAT is said to be the world's record for the quick loading of a steamship was established, when the steamer MALDEN of Boston was loaded by the Baltimore & Ohio railroad at the Curtis Bay, Md., piers, May 10, with 6967 tons of bituminous coal, in 2 hours and 44 minutes, an average of 2548 tons per hour. The best previous record was made April 6, 1917, when the same ship, the MALDEN, received 7263 tons of coal in 3 hours and 30 minutes, an average of 2075 tons per hour.

* * *

The LAKE ELVA, recently completed for the shipping board, at Ashtabula, O., has been secured by the Boston firm of Rogers & Webb. She is bringing a cargo of flour, secured at Buffalo. The shortage of freight cars and the switchmen's strike have caused large quantities of freight to pile up at Buffalo, destined for coast points and this was what prompted the Boston firm to secure the steamer for the flour cargo.

* * *

The BROOKS, 1307 tons, largest destroyer in the navy, in standardization trials over the Rockland, Me., course, developed a maximum horsepower of 31,551 as compared with a contract requirement of 27,030, but fell a fraction short of the 35-knot speed expected from the type. The maximum speed developed was 34.85 knots and the average 34.57. Contract requirements are based on horsepower and officials, therefore, declared the trial successful.

* * *

The 4-mast schooner MAURICE G. THURLOW was launched on May 20 from the Stockton Yards, Inc., Stockton Springs, Me. The schooner was built by private parties and will be managed by Crowell & Thurlow, Boston. She registers 1171 tons net and is built for general cargo carrying.

* * *

Built by the Electric Boat Co., Quincy, Mass., the AA-3, the largest and finest of United States submarines, is at the Provincetown, Mass., harbor, where she is undergoing efficiency tests and trial trips. She is 268 feet long, with improved armament and safety devices and of superior speed.

* * *

The steamer JULIETTE has been bought by the newly formed Block Island, Newport & Providence Transportation Co. for about $10,000 and it is planned to have her make regular trips between Block Island and Providence.

* * *

The Lake-built submarine S-2, launched in Bridgeport, Conn., Feb. 15, 1919, and christened by Mrs. P. B. Brill, wife of the general manager of the Lake Torpedo Boat Co., recently entered active service. She is commanded by Lieutenant Commander Quigley and manned by a navy crew of 23 men. The S-2 is approximately 245 feet long and has a displacement of about 800 tons.

* * *

The MEDRIC was recently launched from the yards of the Portland Shipbuilding Co., Portland, Me., to engage in the fishing industry off the north Atlantic coast and make trips with fish to Rockland and Boston. The new craft is 161 feet in length and is of the same type as the trawlers KING FISHER, PELICAN, FISH HAWK and others built at the Portland plant for the East Coast Fisheries Co.

* * *

The United States government has become the owner of the Commonwealth drydock at South Boston, a draft for $4,158,385.58 having been drawn at Washington in favor of the state of Massachusetts. The drydock will be under the supervision of the commandant of the Charlestown navy yard.

* * *

Announcement has been made that the Housatonic Shipyard, Stratford, Conn., has been sold by the United States shipping board to Albert T. Stuart, vice

president of the A. T. Stuart Co., Newton, Mass. Six 4000-ton vessels were launched at this yard.

* * *

The Canada Steamship Lines, Ltd., Montreal, Que., has sold the Quebec Steamship Co. lines, operating between New York and the West Indies to Furness, Withy & Co., Ltd.

* * *

The launching of the S-17, one of the largest submarines built for the United States navy, took place at the plant of the Lake Torpedo Boat Co., Bridgeport, Conn., on May 22. The S-17 is the fourth and last craft of its type to be launched there. Mrs. R. G. Thomas, wife of Commander Thomas, inspector of machinery at the Lake plant, was sponsor. The S-17 represents the newest naval ideas in submarine construction. An important innovation is the use of the double hull, a safety measure that is designed to minimize the dangers resulting from collision. The ship is 270 feet long and has a beam of 27 feet.

* * *

The cargo carrier OCCIDENTAL was recently launched from the yard of the Texas Steamship Co., Bath, Me. She was christened by Miss L. P. Weber. The company has two more 10,000-ton ships on the ways.

* * *

The first schooner to be launched from the Pendelton yard, Belfast, Me., was the 4-mast BLANCHE C. PENDLETON, christened in honor of the wife of the builder, Fields S. Pendleton, New York.

* * *

The schooner ROBERT W., now at the Snow yard, Rockland, Me., undergoing repairs, has ben sold by W. M. Munroe, Boston, for Louis Eaton, Stonington, Me., to the Red Beach Plaster Co. for $3750. She will be placed in the trade carrying plaster rock between Red Beach, Me., and Windsor, N. S.

* * *

An order for the largest steel yacht ever constructed at Bristol, Conn., has been received from a prominent business man in the west. The craft will be 165 feet in length and will embody the latest ideas in yacht building and equipment.

* * *

It is understood that a new marine railway is to be constructed at Boothbay Harbor, Me., as a part of the equipment of the yards of the Atlantic Coast Co., the principal owner of which is the Boston firm of Crowell & Thurlow. Building at the yard at the present time are two 4-mast schooners of 1200 tons each, 50 per cent completed.

Activities Along the Gulf Coast

GRADUALLY, the packet, famous since the days of the ROBERT E. LEE, the NATCHEZ, the BELLE OF THE BENDS, and others, is passing from the Mississippi river and other streams of the South. The latest to go is the big steamer JOHN D. GRACE, in service between New Orleans and Plaquemine, which has been withdrawn by the Bradford Transportation Co., New Orleans, her owner, and is now for sale. This leaves only four of the old-timers on the river, HOUMA, CLIMAX, CITY OF MUSKOGEE, and JESS WILLARD. Power freight and passenger carriers and barge services have put them out of business, the rates of the large power boats and the barges being from 12 to 15 per cent less than those of the packets, and 20 to 22 per cent under those of the rail lines.

* * *

The old wooden harbor light posts, extending from the mouth of the river up to the city light at New Orleans, some 110 miles, have been replaced by 40 steel towers, bedded in concrete, at a cost of $50,000, according to E. S. Lanphier, superintendent of lighthouses at the Crescent City. Electric lights of 160-candlepower have been substituted for the old 40-candlepower lanterns. This change also has eliminated the light tenders, who, for more than 75 years, have had the right of way in their skiffs and catboats up and down the river.

* * *

Johnson Iron Works, late in May, launched from its yards on the Bayou St. John, New Orleans, its fourteenth hull, the all-steel, self-propelled barge CORTEZ, to be used in rough water at the pipe line terminals of the Cortez Oil Corp., off shore at Tampico, Mexico. CORTEZ is driven by two 80-horsepower gasoline engines, and equipped with a 10-ton derick operated by either one of the engines. She will go under her own power to Tampico, late in June.

* * *

The United States shipping board's free marine engineering school opened its midsummer term in Stanley Thomas hall, Tulane university, New Orleans, June 1, under Prof. James M. Robert. The term is of four weeks and fits students for third assistant engineers' licenses, or higher. Men needing sea service to qualify, may take it after completing this course.

* * *

Capt. Paul G. Mildred, who won fame as a captain of British convoy ships in the Mediterranean during the world war, dropped dead on the bridge of his steamer, LADY OF GASPE, while on the Gulf of Mexico, late in May, and was buried in Metairie cemetery, New Orleans. He was employed by the Beninato Fruit & Steamship Co.

* * *

The Cuyamel Fruit Co., New Orleans, has made the following promotions and changes: Capt. O. Peterson, formerly first mate on COPAN, is now master of that steamer, following the resignation of Capt. B. Lawson; Capt. Domingo Ajubita, formerly first mate of QUINISTAN, is now master; Capt. Edward Wells, of QUINISTAN taking charge of the steamer AUGUSTA.

* * *

Consular invoices and other papers regarding shipments to Mexico are to be made out and all fees paid in the office of Francisco Tejeda Llorca, recently appointed commercial agent of the new government of Mexico for the New Orleans district, instead of at the consulate of the Carranza government. Reports from agents of the various shipping lines plying between New Orleans and Mexico indicate that normal conditions prevail at all of the latter ports.

* * *

Poor packing of three airplanes shipped from New York to the Mexican government, via Vera Cruz, caused the holding of the Dutch steamer ZUIDERDIJK, for one month in the Mexican port, until the planes could be taken to Mexico City, assembled and tried out. The crates in which the airplanes were packed fell apart on the deck, according to Capt. J. K. Lieuwen, of the vessel, who filed a claim for 30 days demurrage charges with the Mexican government.

* * *

The new shipping board steamers DANVILLE and LAKE FESTINA, reached New Orleans late in May. The former brought molasses from Cuba and took on a full cargo of general merchandise for Cuban ports, while the LAKE FESTINA took a cargo of molasses for France.

* * *

Strike of boilermakers and their helpers, with the resultant enforced idleness of other metal trades workers, affected seriously every shipyard and repair plant in New Orleans, throughout May, with the exception of the Foundation Co. and the Doullut & Williams Shipbuilding Co., Inc., both of which have been paying for some time higher wages than the other plants. The strikers demand increases from 80 cents to $1 an hour for journeymen boilermakers, and from 54 to 75 cents an hour for their helpers.

* * *

A. Duvic & Co., ship outfitters, and one of the largest distributors of marine gasoline and oil engines, and small steam engines in the South, have organized the New Orleans Shipbuilding Co., and established a modern plant in New Orleans for the construction, equipment and repair of small steamers and power passenger and freight carriers on the Bayou St. John.

* * *

CITY OF LORDSBURG, sixth of a fleet of eight steel steamers built by the Mobile Shipbuilding Co., Mobile, Ala., was launched May 15. This is the fourth steel hull launched in Mobile in the first 15 days of May, and was named in honor of Lordsburg, N. Mex. She is of 5000 tons and was built for the Emergency Fleet corporation.

Practical Ideas for the Engineer

Analysis of Cargo Handling Methods With a Particular Study of British Ports—How Piston Rings are Made

THE measure of efficiency in loading or discharging cargo, should be the time required to receive freight underneath the hatch and to stow it, and, in the opposite direction, to break down the cargo and to place it under the hatch ready for the hoisting sling, and until other operations are as speedily performed as that of stowing or breaking down, the performance should not be considered a perfect one. Space should be provided in the transit sheds for stacking in classified groups the greater part of a ship's cargo opposite the ship's berth, with proper aisle space for handling the goods and removing them by mechanical appliances. This means in most cases wider transit sheds than are now in use in American ports, and such width cannot be had upon narrow piers which berth a ship on each side.

It has been explained by shipping men and engineers in this country that the English quay system involving dock basins behind locks, has been adopted in every instance on account of the wide range of tide, and, beyond question, this has been the most potent factor in the lock basin development. But it does not explain why the most modern English dock systems are constructed as long narrow basins with a quay wall on each side, when some of the older systems have piers within basins.

Probably the most modern English comparison of the difference between pier and quay construction is at Manchester. The ship canal was opened in 1894, so that the whole terminal at Manchester may be considered fairly modern. The first berths constructed consist of narrow piers with provision for ships on both sides, and single story transit sheds. Their latest development at dock No. 9 is a slip 2700 feet long, with transit sheds 110 feet wide, and four stories high. Incidentally, they insist that these are not warehouses but transit sheds. In addition to the crane tracks, two lines of standard gage railway tracks run on the waterfront between the sheds and basin, two lines of standard gage tracks at the rear, and back of this a large railway yard. Also, enough electrically operated gantry cranes are

A paper presented at the meeting of the Material Handling Machinery Manufacturers' association, held in New York, Feb. 26, 1920. The author, F. T. Chambers, is captain, C.E.C., United States navy.

DURING the summer of 1918, Capt. F. T. Chambers was sent abroad by Mr. Hurley, then chairman of the shipping board, at the head of a mission to study the various features of port management and port development, with a special view to obtaining such information with regard to handling methods as might, when applied to home problems, reduce ship turnaround. This study involved the organization for the control of ports, the zoning of cargo distribution, drydocks and repair plants, bunkering and cargo coal, oil bunkering, warehouses, handling and railways, tugs, barges and lighters, labor and stevedoring. In the accompanying article, Captain Chambers outlines what he learned of British methods and points out those features of British practice which can be applied to advantage at American ports.

provided to allow one to each hatch of every vessel. The booms of these cranes are of sufficient reach to plumb the center of the hatch of a vessel when a coal barge or lighter is lying between the ship and the quay, and also to handle cargo to or from any of the four floors of the sheds. To prove that the 4-story transit shed has given satisfaction, the company has in prospect the construction of 5-story transit sheds, 132 feet, 6 inches wide, to be served both on the water front and in the rear by electric gantry cranes. The cranes already installed at No. 9 dock are also fitted with distant control apparatus, so that the operator may stand on the deck of the ship looking into the hold, and still operate his machine with perfect satisfaction.

Docks at London

London docks give a most excellent illustration of growth in the matter of convenience and expedition in handling. True, the older docks are mostly of the basin type without piers, but at both the Victoria and Albert docks at the Tilbury dock, which are the latest and best equipped with modern appliances, the construction started with basins having piers. The Royal Victoria dock is a wide basin into which numerous comparatively narrow piers project from the northerly side, and these piers naturally have berths for ships on both sides, but in the extension of this dock, the Royal Albert basin was constructed. It consists of a long narrow waterway, with berths only at the quays on two sides. Here, too, as at Manchester, the transit sheds line practically the entire quay, and have two lines of standard gage railway, both front and back, with other tracks forming a considerable railroad yard. The cranes, too, are of the most modern type, and sufficient in number to allow one to each hatch of the vessel.

At Tilbury, the first construction consisted of a basin almost square in plan, with two piers projecting into it. These piers are 250 feet and 300 feet wide, respectively, and 1600 feet long. Their transit sheds and railroad systems are similar in layout to those at the Albert dock. Yet when this basin was extended the long narrow quay plan was adopted. The new Royal Albert dock, south, is also a long narrow basin, with berths only on the sides. It seems, therefore, fair to assume that when compared with the greater transit shed capacity attained by means of the quay system, the pier system is found wanting.

The so-called jetty system, as exemplified at the Millwall Grain dock, and at the Royal Albert dock is also interesting. Parallel with the face of the quay wall of the basin, a pier system is built of just sufficient width to accommodate the long reach gantry crane. The distance between the inner face of the pier and the outer face of the quay is just enough to accommodate barges and lighters, such as those which handle grain and coal. The cranes, instead of being established on the quay, are placed on the so-called jetty and have sufficient reach to handle material from the ship's hold to the railroad cars, or transit shed on shore. The ship, of course, docks on the outer side of the narrow jetty, and is thus enabled to load or unload from barges or lighters on both sides at the same time, or from shore.

Contrast the transit shed space offered by the quay system, especially at Manchester, with the proposed 125 x 1000-foot pier at Staten island. Is not this question of capacity one which can be worked out in actual figures, and can such actual figures be made to justify a total width of

125 feet to accommodate ships on both sides? Is the English system of ample railroad trackage for such modern docks not based upon wide shipping experience, and can it be successfully contended that the Staten island pier will have satisfactory railroad connections? Is it not a fact that both incoming and outgoing cargo must be received on the dock, and that full speed of handling cannot be attained unless ample space is provided for the greater part of the cargo of each individual ship opposite its berth? And surely maximum speed of handling cannot be maintained if all of the cargo unloaded from a ship must be transported by trucks along the entire length of a long pier, and then across a busy street before it reaches a warehouse. Surely the most satisfactory general system requires that so far as practicable the ships shall be a continuation of the railways, and *vice versa*.

Cranes Play Important Part

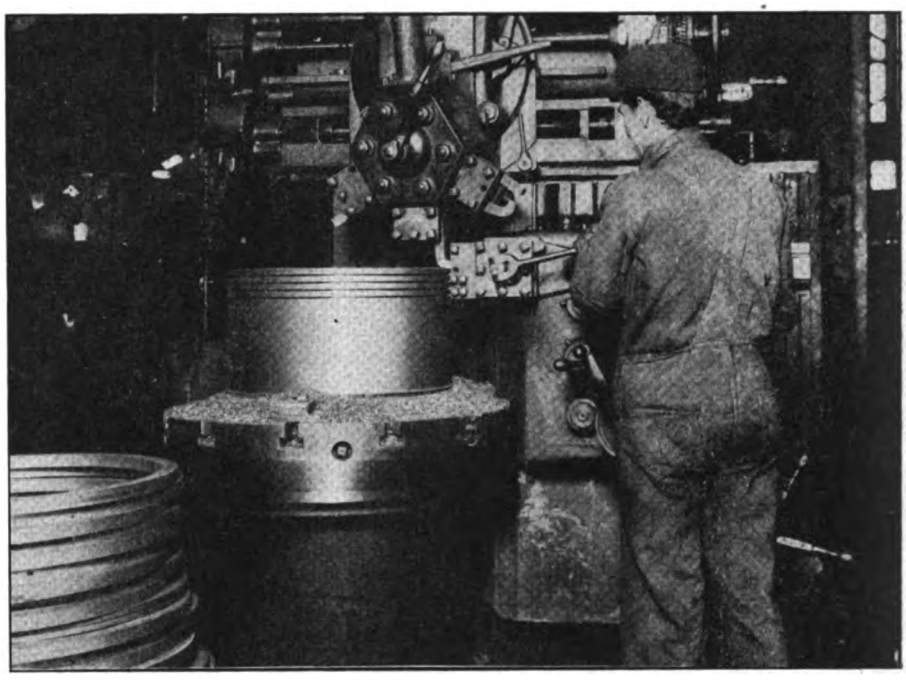
With regard to the general character of handling, nearly the whole of this work which is done mechanically is by means of cranes. Speaking generally, the older installations are hydraulically operated, and of 1½-ton capacity. Four cranes are usually provided per berth. Practically all of the new cranes are electrically operated, and the most recent ones at Albert and Tilbury docks have a 65-foot reach. Track gage is 15 feet, and the standard gage track passes directly beneath, with room for the standard freight car. Four to six of these electric cranes are provided for each ship's berth. Almost without exception, two to three lines of standard gage track run between the edge of the quay wall and the face of the transit shed. Hand trucks are used almost exclusively to transfer the material between crane sling and transit shed, or the railway tracks at the rear of the shed.

At London, probably more 1-story than 2-story sheds are found, while at Liverpool the 2-story sheds seem to predominate. Many warehouses are provided alongside the quays, especially at the older London docks. Belt conveyors were observed at flour mills on the quay side, and a notable installation of such belts at the cold storage warehouse at the Albert dock. Not only are there fixed belts running the entire length of the second story just inside the doors of the transit shed, but probably as many as 50 separate portable belt units which could be used in connection with the fixed belts, so that material could be handled to or from any point on the floor. Also, in connection with the Albert dock cold storage warehouses, a notable combination of mechanical appliances was observed unloading quarters of beef from a vessel at the quay. The ship's gear landed these quarters of beef upon a portable belt unit, which transferred the cargo from the edge of the hold to the side of the transit shed, where a chain was hooked around the shank of each quarter of beef by hand, and fastened to an overhead trolley, which delivered its load either to storage, or to lighters waiting alongside, but further down the dock.

Grain elevators, both of the suction and of the chain belt bucket type, are used in unloading ships at various places. The suction elevators usually had their own floats, while the chain belt bucket installations were portable units, suspended from the ship's booms. At Manchester, the entire length of the quay is equipped with a grain tunnel, in which are installed three wide belts. The roof of the tunnel is provided at frequent intervals with manholes into which the chutes of the chain belt bucket portable units can be projected, in order that grain may be unloaded mechanically from a vessel, while mixed cargo is being taken out with the cranes, or ship's gear. The belts in the tunnel lead to a grain elevator at the head of the 2700-foot slip, where the grain is received upon vertical elevators for mechanical handling to the various bins.

At Tilbury a vessel was being unloaded by means of the electric cranes and ship's gear, and instead of rope slings, the cargo, which consisted mostly of cases of canned goods of the ordinary size, was handled upon flat wooden platforms, which in general held 16 separate cases. These cases came off in uniform stacks, instead of in a more or less irregular mass, as would have been the case with rope slings or nets. The platform ropes, where they passed over the edges of the boxes, were provided with an angle shaped wooden guard which served to keep the load intact. This same arrangement has been used in this country, and should lend itself most admirably to transfer, without breaking up the load, to electric trucks or trailers. Floating derricks of 50-ton capacity are used at various locations, and gravity (roller) conveyors are occasionally seen.

(To be concluded)



FORMING PISTON RINGS FOR DIESEL ENGINES

Making Piston Rings

To develop uniform wearing qualities and to reduce the cost of manufacture, a method of producing large piston rings, especially for marine diesel engine use, has been developed. The method is shown in the accompanying illustration where a vertical turret lathe with side attachment is used. The side cutting tool is of the box type and has four cutters graduated from a short tooth at the bottom to a long tooth at the top. The top tooth is of such a length as nearly to cut through the thickness of the blank from which the rings are formed. In operation, the stock

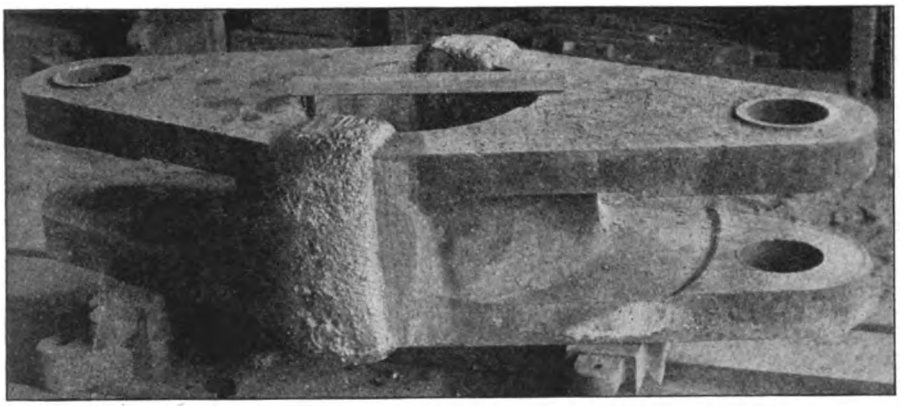


FIG. 1—WELDS ON THE RUDDER HEAD OF THE STEAMER LEOPOLDINA AFTER THE RISERS AND POURING GATES WERE REMOVED

in the form of a pot casting is mounted on the platen and turned on the outside to the desired diameter. The top edge is then faced off with one of the turret tools. Afterward the side cutting tool is used to cut four grooves, the top groove being the depth of the finished ring, but not being deep enough to cut through the casting because of extra material left on the inside. The final operation is finishing the interior and outside by means of a gang tool in the turret head which automatically separates the top ring from the blank. For the next operation, the side cutting tool is lowered so that the three upper teeth engage in the remaining three grooves, the lower tooth starting the cut of a fourth groove, and the upper tooth finishing the cut of the top groove. This operation is repeated until the casting is used up. The rings are then diagonally cut on a milling machine equipped with a metal slitting saw.

To Revise Ship Rules

Plans are under way for revising the classification rules of the American Bureau of Shipping on the subjects of propellers and of internal combustion engines. The bureau called a conference in New York on June 7 with all the principal builders of internal combustion engines for the purpose of making a preliminary survey into the progress that has been made in the development of the diesel engine. The decision to revise the rules of the official classification society of the United States in this regard was decided upon in view of the great progress made along these lines since the war.

The American bureau also has its surveyors working on the propeller problem and in the near future will probably issue new regulations on these. This action was prompted because of the large number of accidents happening to the propellers It is felt that for the better protection of shipping it is now necessary to devise stricter rules for the inspection of propellers.

Volume of Air Needed for Preheaters

Recent tests to determine the proper amount of air required for special thermit welding gasoline and compressed air preheaters showed that 25 pounds per square inch seems to be a practical minimum for operating preheaters. At this pressure, a single burner preheater will require approximately 25 cubic feet of free air per minute and a double burner preheater approximately 50 cubic feet of free air per minute. For very large welds, where the walls of the molds are thick and the preheater gates longer than usual, a pressure of 40 pounds per square inch would be advisable. This would require approximately 35 cubic feet of free air per minute for a single burner preheater and 70 cubic feet of free air per minute for a double burner preheater.

In the case of a large plant with a central air compressor plant, upon which demands are being made by many departments, the pressures quoted should be maintained at the outlet to which the preheaters are attached. Tests were by the Metal & Thermit Corp., New York.

Welding a Rudder Head

Application of thermit welding in connection with realignment and other general utility work on large marine castings is shown by the accompanying illustrations of an unusual repair job recently made at the Brooklyn navy yard, New York.

Figs. 1 and 2 show an interesting double weld made on the cast steel rudder head of the steamship LEOPOLDINA, formerly the BLUCHER, belonging to the Compagnie Generale Transatlantique. The purpose of this job was to make feasible some repairs needed on the rudder stock, the upper part of which fits into a key of the rudder head. In order to make these repairs, it was first necessary to remove the rudder stock from the rudder head. These two sections, however, had become so tightly locked together that it was finally decided to separate them by cutting through one side of the rudder head with an oxyacetylene torch. The rudder head was then removed.

In repairing the rudder head, it was necessary to cut through the side opposite the first cut in order to make two welds instead of one and thus later equalize the effect of contraction when the welds had cooled. Having done this, the two parts were lined up so as to leave small gaps at the oxyacetylene cut.

As the next step a yellow wax pattern was applied to the space formed by the gap and shaped around the adjacent portions of the casting in the form of a collar. A mold was then built around the wax pattern and the wax burned out of the mold by means of gasoline torches. This also served to preheat the parts of the casting near the welds, thus providing a more uniform contraction when the welds cooled. Both welds were poured simultaneously, using 350 pounds of thermit, and the crosshead quickly returned to service. It is interesting to note that as this repair was urgent only 9 to 10 hours of working time were required to complete the welding operations.

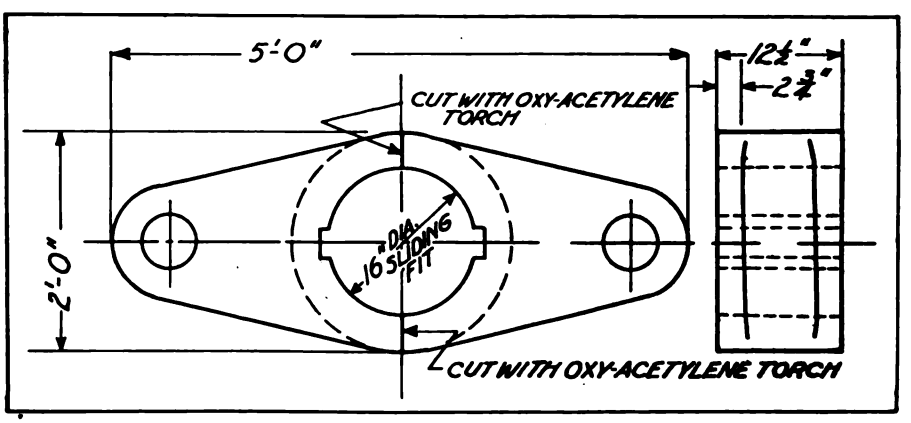


FIG. 2—GENERAL DIMENSIONS OF LARGE CASTING WELDED WITH THERMIT

Welds Propeller Strut

The accompanying illustration shows a thermit weld made on the starboard propeller strut of the United States destroyer MACDOUGAL, at the Brooklyn navy yard. Extremely accurate allowance had to be made for contraction of the weld. The cast steel lower leg of the strut had been forced and elongated outward from the side of the ship, so that the propeller shaft bearing was ½-inch out of alignment. To remedy this defect, a small section was cut out of the lower leg of the strut in order to shorten it the required amount. The two sections of the lower leg were then reunited by thermit welding. The section welded was 3 inches thick at its thickest part and 22 inches wide. It required 200 pounds of thermit.

New Pacific Ship Firm

Incorporation of the Los Angeles Steamship Co. (with a capitalization of $5,000,000, to own and operate the steamers YALE and HARVARD between Los Angeles and San Francisco, has been completed. The steamers were purchased from the government at a cost of $1,755,000. They are expected to arrive on the Pacific coast from Philadelphia July 1.

Contracts for remodeling and refitting the vessels on their arrival on the west coast have been awarded to the Ralph J. Chandler Shipbuilding Co. and the Los Angeles Shipbuilding & Drydock Co. Specifications call for general overhauling and reinforcement of the hulls and the installation of new machinery. These with the elaboration of passenger accommodations are expected to cost $1,500,000. The company has applied for the allocation of four of the new 14,000-ton freight and passenger vessels from the United States shipping board, and expects to enter the transpacific trade if these are secured.

Officers of the new corporation are Fred L. Baker, president; M. H. Sherman, vice president; E. M. Leaf, secretary; M. H. Whittier, treasurer. Other directors are: Harry Chandler, E. L. Doheny and Ralph J. Chandler.

Book Review

Simple Rules and Problems in Navigation, by Charles H. Cugle; cloth; 305 pages, 6 x 9 inches; published by E. P. Dutton & Co., and furnished by THE MARINE REVIEW for $4.00.

The author is a master mariner who after leaving the sea conducted a navigation school in New Orleans and the material contained in the present volume, now in its third edition, was used in instructing pupils. The present edition was revised and corrected by Bradley Jones, instructor of navigation at the Massachusetts Institute of Technology, Boston.

Mr. Cugle has met with success as an instructor and through long practice he has gained a thorough knowledge of the stumbling blocks in the way of the average student in his attempt to master the science of navigation. In the present volume, where technical terms predominate, they are explained in such a way that the average layman can comprehend them.

The book first takes up international and inland rules of the road followed by a chapter devoted to useful definitions and other information. These are arranged alphabetically for ready reference. Next, a section is devoted to the arithmetic of navigation in which logarithms as well as simple problems are fully explained. Dead reckoning, mercator's sailing, middle latitude sailing, and numerous other navigation problems are next treated.

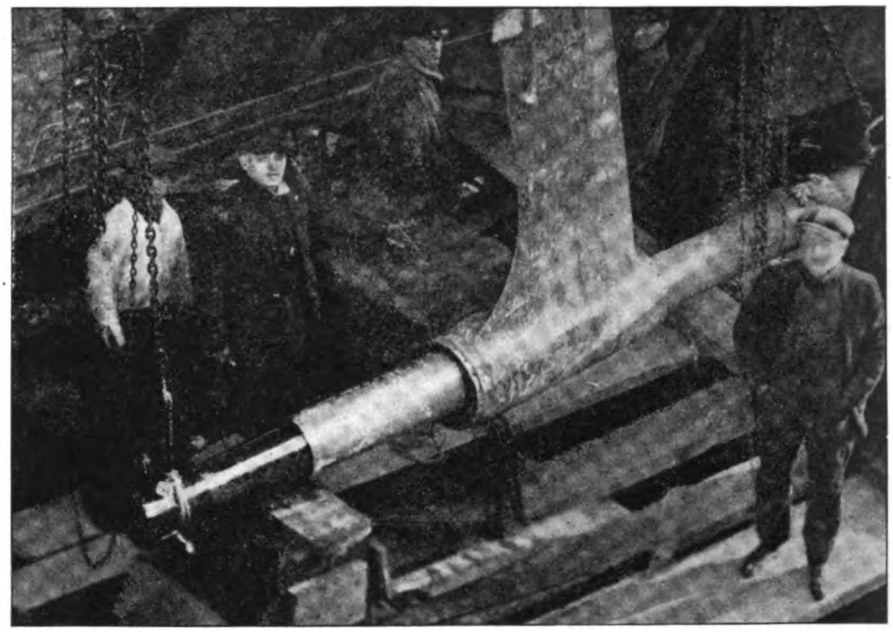
Two charts are included which explain the method followed by the author in plotting one observation of the sun or a star on a mercator chart.

In the present edition, Bradley Jones points out that the problems have been carried out with a fine degree of accuracy and that the interpolations used are sufficient to satisfy the strictest local inspector or the most rigid exponent of sea practice.

The board of commissioners of the port of New Orleans has assessed 10 cents a ton tollage on all freight passing over the wharves.

To Build Oil Barges

J. Samuel White & Co., Ltd., East Cowes, Isle of Wight, have secured a contract to build and equip three steel single-screw motor barges, of 500 tons capacity each, for carrying oil fuel in bulk. These vessels will be of the single-deck type, with upright stem and elliptical stern and are to have one mast and derrick and hand winch each. The machinery is to be placed aft and will consist of a 2-cycle Kromhout oil engine and accessories. Two pumps will be provided for the cargo, each with a capacity of 100 tons per hour. The oil will be carried in three cargo tanks divided by a longitudinal bulkhead into six oil-tight compartments. The vessels will be built for river and harbor service. Accommodation for five men will be provided in two rooms in the forward part of each vessel, with cooking range and food lockers.



WELDED PROPELLER STRUT ON THE U. S. DESTROYER MACDOUGAL

Seabury & de Zafra, Inc., New York, have been appointed by Manuel Angel Fernandez & Cia., Vera Cruz, Mexico, as their consulting naval architects and marine engineers in connection with their rapidly developing line of freight vessels operating along the east coast of Mexico in conjunction with the Ward line.

One of the longest passages on record from Australia was made by the 4-mast schooner MINNIE A. CAINE, which arrived on Puget sound from Adelaide, 120 days out. The vessel was delayed by calms and contrary weather and anxiety was expressed as to her safety.

Equipment Used Afloat, Ashore

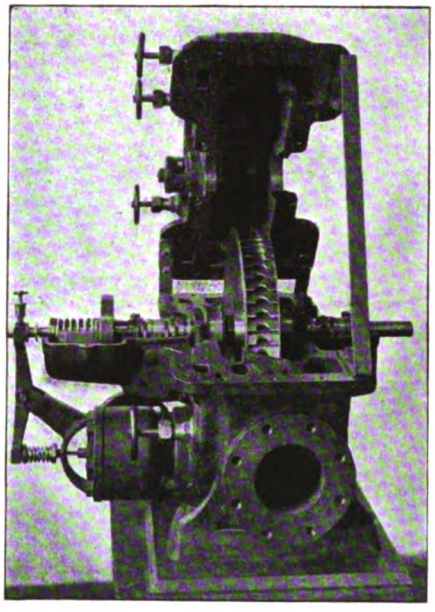
Large Bending Roll—Steam Turbine—Oil Separator

FOR rolling keel plates and other classes of work where sharp radii are required, the machine shown in the accompanying illustration recently was built for the Mare Island navy yard, San Francisco, by the Southwark Foundry & Machine Co., Philadelphia.

This unit is said to be one of the largest of its kind in existence. It is of the strong back construction type, all parts being heavily proportioned to withstand the strains to which the machine is subjected. The rolls are forged steel mounted in cast iron housings of box type construction. The upper roll is 22 inches in diameter and is supported at four points between its journals by steady rollers. These are carried by a heavy arch beam made of rolled steel sections.

The two bottom rolls are each 18 inches in diameter, reinforced to give them the required stiffness. The strongback girder is fitted into the crosshead, both crossheads being hung on a swivel so that the top roll can be thrown out of parallel. All journals run in bronze bushings while the gears are steel and are of the cut tooth type.

The bottom rolls are driven from both ends by means of large diameter gears fitted to the roll ends. The screw-down mechanism is of the overhead type as used in rolling mill housing construction and is operated by a separate 50 horsepower motor. The main drive motor is 150 horsepower and runs at 575 revolutions a minute.



NONCONDENSING STEAM TURBINE

The control station is located on a platform at one end of the machine. This is so arranged that the operator can see the full length of the rolls on both the discharge and entrance sides. All operating levers and controllers are grouped at convenient positions on the platform.

This unit has a capacity for bending plates up to and including 1¼ inches, 37 feet wide. Total weight of the machine, with motors, is 495,000 pounds. Nine cars were required to transport it to its destination, the machine being dismantled and shipped in sections.

Steam Turbine

The steam turbine shown in the accompanying illustration recently was developed by the Terry Steam Turbine Co., Hartford, Conn. It is known as the noncondensing type and was designed for use on United States naval vessels. Steam enters through a port shown in the foreground and passes through a nozzle which directs it on to one side of the wheel buckets.

The shape of the buckets is such that the direction of flow of the steam is reversed 180 degrees, so it is thrown out against the casing where it strikes a reversing chamber which returns it again to the wheel buckets. This action is repeated several times until all the available energy is obtained.

The principal features of the new design are pointed out to be the low exhaust connection which tends to minimize pipe strains and to reduce piping, and the enclosed wheel which means that the casing proper is subjected to exhaust pressure and temperature only. The runner is a solid steel forging. The notches at the center of each blade reduce weight and stresses.

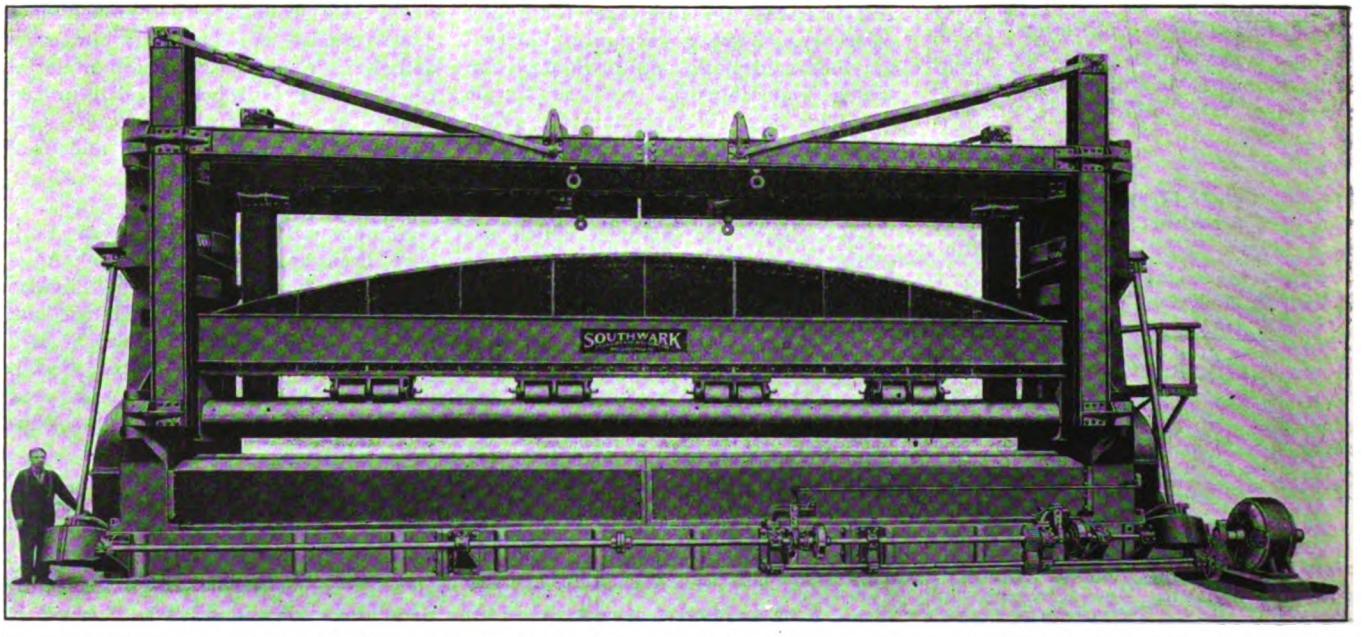
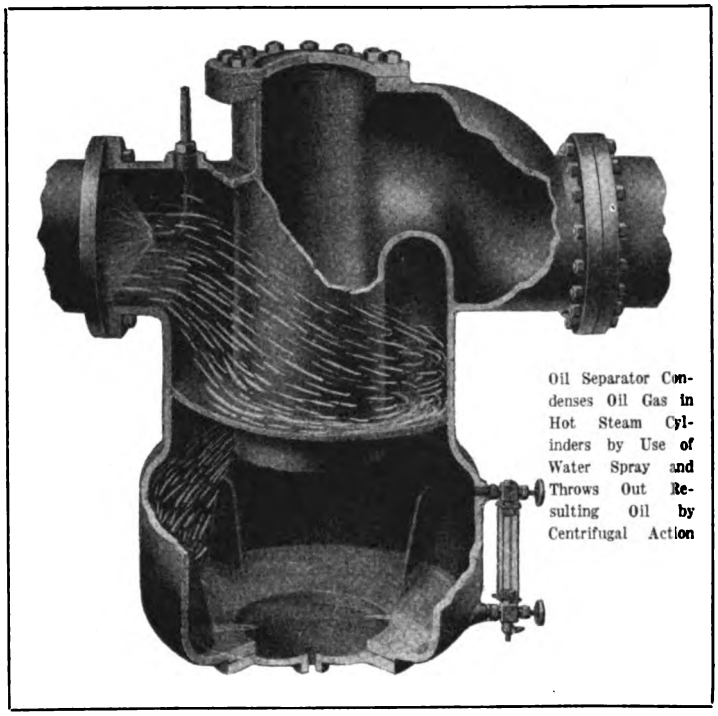


PLATE BENDING ROLL DESIGNED FOR 1¼-INCH PLATES 37 FEET WIDE—THIS IS THOUGHT TO BE THE LARGEST BENDING ROLL IN THE WORLD, WEIGHING 495,000 POUNDS AND REQUIRING NINE CARS TO TRANSPORT IT

Designs Oil Separator

A combined gas washer and oil separator designed to separate the liquid particles of oil from exhaust steam is being placed on the market by the Griscom-Russell Co., New York. It is claimed that no oil gas can leave the separator with the steam gas to continue on into the pipes and the feed water heater or heating system, to condense and cause trouble. The separator's construction, as shown in the accompanying illustration, is simple. The entering steam must pass through a curtain of water thrown entirely across the inside of the separator's throat by a spray nozzle located in the center of this inlet steam passage.



Oil Separator Condenses Oil Gas in Hot Steam Cylinders by Use of Water Spray and Throws Out Resulting Oil by Centrifugal Action

This spray accomplishes two things: First it forms a zone across the pipe in which the temperature is reduced, thereby condensing the oil gas which is in unstable equilibrium. As this condensing action occurs in contact with water, the liquid oil, as it forms, collects around the individual particles of spray-water; second these resultant oil-covered drops of water are then carried along with the steam into the separator and thrown out of the steam current by centrifugal action as the steam passes along the spiral passage.

As shown in the illustration, the steam on entering the separator receiver, makes a quick turn directly away from the water and passes out through a central passage and does not again come into contact with the oil water. Vanes as shown are cast in the receiver walls to arrest the motion of the water and oil which otherwise would continue to swirl around the inside of the receiver. The separator is made in seven types and in 24 sizes from 2 to 38-inch, weighing from 75 to 18,200 pounds.

Four-mast schooner C. C. MENGEL JR., which arrived at Boston recently from the west coast of Africa, has been sold to English parties for $110,000.

Big Clipper Model

One of the finest models of a sailing vessel ever seen at Seattle was exhibited aboard the Blue Funnel liner, IXION, recently arrived from the Orient. The model is the work of T. W. Davidson, the IXION'S chief officer. It is a 3-mast, full rigged ship, 3 feet long and is modeled after the famous CUTTY SHARK, which vessel shared with the speedy THERMOPYLAE, the honors of being ranked as among the fastest sailing ships ever constructed. The model represents more than a year of careful work. The hull is built with frames, knees, angles and planks all proportioned according to scale. The deck planking is mahogany. The bolts and other metal parts are aluminum while the wheel and tackle blocks are cut from horn. The rigging has been deftly arranged, and the running gear is workable permitting the yards to be braced, raised or lowered. The little vessel is complete in every detail, even down to the grating in the captain's gig.

Recently A. T. Haeberle, acting American consul general at Rio Janeiro, Brazil, declared local ship repairing firms ineligible for further work on United States shipping board vessels. Alleged excessive charges for repairing shipping board vessels were several times subject to investigation last year.

Business News for the Marine Trade

A section of a pier owned by the Galveston Wharf Co., Galveston, Tex., recently was damaged by fire. The total loss was estimated at $1,500,000, which includes damage to stock stored in warehouses.

Andia & Ferrary, Brooklyn, N. Y., ship chandlery, recently were incorporated with a capital of $30,000, by J. A. Wilson, G. Ferrary, and B. Andia, 73 Northern avenue.

The capital stock of the Hillebrandt Steamship Co., New York, which was recently incorporated, has been increased from $200,000 to $1,000,000.

Harold V. Williams, Louis Krumholz and Adelaide Weil, all of New York, were named as the incorporators of the following companies, which were chartered recently in Delaware: Arcadia Steamship Co., $6400 capital; Pawnee Steamship Co., $6400 capital; Andalusia Steamship Co., $6400 capital, and Ascutney Steamship Co., $6400 capital.

The Bethlehem Shipbuilding Corp. recently purchased additional machinery for its Fore River plant, Quincy, Mass., to be used in scout cruiser construction work. The Fore River plant recently delivered the last of 71 destroyers built under war contracts. The machine tool equipment recently purchased, will be installed in a combination shop, 51 x 222 feet, erection of which is now under way.

The Boston & Porto Rican Steamship Co. recently was incorporated in Delaware with a capital stock of $1,500,000, by William F. O'Keefe, George G. Steigler and E. E. Aberle, all of Wilmington, Del.

The United States shipping board has sold the Housatonic Shipyard, Stratford, Conn., to Albert T. Stuart, vice president of T. Stuart & Co., Newton, Mass., contractors.

Capitalized at $300,000, the S. O. S. Welding Co., Lexington building, Baltimore, recently was chartered by Samuel K. Dennis, Paul M. Higginbothom and Gerald W. Hill.

Charles L. Stockhaisen, Gay and Water streets, Baltimore, has purchased the plant of the General Shipping Co., Inc., Alexandria, Va., which was originally erected for the construction of submarine chasers.

The Wheeler Iron Works, Wheeler, Oreg., has been incorporated with a capital of $5000, by Wilbur McCrackern and others, and will engage in a general foundry and repair work.

The Galveston Wharf Co., Galveston, Tex., is planning a series of cotton compress plants to serve the wharf district, and to have an initial capacity of 1300 bales in 24 hours. Conveying equipment will be installed, and it is estimated the total project will cost about $500,000.

The Davie Shipbuilding Corp., Levis, Que., a subsidiary of the British Empire Steel Corp., has taken options on property in Lauzon, Que., and is reported planning to build a plant for the manufacture of ship steel.

The Oklahoma Oil Works, Tampico, Mexico, has changed its name to the Tampico Marine & Iron Works. The company is enlarging its machine shop.

The city council, Camden, N. J., has authorized the harbor committee to erect a new marine terminal

and warehouse, and contracts are expected to be awarded at an early date. The mechanical installation will include conveying machinery, loading and unloading machinery, etc.

The United Iron Works & Machine Co., Toronto, Ont., has purchased buildings at Milton, Ont., and will remodel them and install equipment for the manufacture of engines, machinery, tools, etc.

Capitalized at $10,000, the New York Model Boat & Mfg. Corp., New York, recently was incorporated by R. W. Long, R. F. Thomas and T. W. Tannock, 41 Broad street, New York.

The Speakman Co., 816 Tatnall street, Wilmington, Del., manufacturer of steam specialties, has awarded a contract for the erection of a foundry, 50 x 100 feet.

The Saffell Water Heater Mfg. Co., 1310 San Pedro street, Los Angeles, recently was incorporated to manufacture water heaters and specialties, by A. H. Saffell and others.

The William V. Dee Co., Bridgeport, Conn., has been incorporated to make marine fittings, supplies, etc., with a capital of $50,000, by W. V. Dee, D. S. Day and Jonathan Grout, Fairfield, Conn.

Capitalized at $40,000, the Greenwich Yacht & Motor Corp., Greenwich, Conn., recently was incorporated by S. G. Wingapaw and others.

The Johnson Shipyards Corp., Staten Island, N. Y., recently acquired a plant site, 152 x 171 feet.

The Aldrich Pump Co., Allentown, Pa., recently broke ground for the erection of an addition to its plant.

The Premier Motor Corp. of America, 810 Pennsylvania building, Philadelphia, recently was organized to manufacture marine motors, by T. O'Leary and others.

The Pendell Boiler Co., Schenectady, N. Y., has been incorporated with a capital stock of $100,000, by M. Everetts, O. Pendell and F. Weinberg.

The Albina Marine Iron Works, Portland, Oreg., recently was incorporated with a capital of $50,000, by William Cornfoot, George Rogers and George Pinketh, to manufacture and repair boilers.

The Jahncke Dry Dock & Ship Repair Co., New Orleans, will equip a third drydock at its plant.

The Lord Construction Co., 105 West Fortieth street, New York, which will operate a shipyard under the name of the Lord Dry Dock Co., at North Bergen and Guttenburg, N. J., has compiled a list of tools for its plant, which includes lathes, punches, shears, radial drills, milling machines, etc.

The Marine Express Corp., New York, recently was incorporated with a capital of $5000, by F. J. V. Wagner, W. Shea and L. W. Martin.

Stephen Ransom, 401 West street, New York, operating a ship and general marine works, boiler plant, etc., has plans for the erection of two 1-story shops, 160 x 200 feet and 55 x 70 feet, to be erected at an estimated cost of $250,000, including equipment.

The Bay State Welding Co., Boston, recently was incorporated to take over the partnership of Frederick H. Baldwin, G. D. G. Baldwin and Ralph A. Gooch, 56 Long Wharf, Boston. The new company is capitalized at $10,000.

The capital stock of the Camden Shipbuilding Co., Camden, N. J., has been increased from $200,000 to $600,000.

A. P. Vane, Vane Bros., Baltimore, operating a ship chandlery at 602 East Pratt street, has acquired the plant of the Delaware Shipbuilding Co., Seaford, Del., which has been idle for more than a year. It is planned to inaugurate operations at once on new construction and repair work.

Plans of David Rodgers, former general manager of the Skinner & Eddy Shipbuilding Corp., to establish a shipbuilding plant at Seattle, have been abandoned, because of the lack of sufficient financial backing. Mr. Rodgers is said to have had contracts for $40,000,000 worth of work.

The National Engineering & Dry Dock Corp., Sacramento, Cal., recently was incorporated with a capital stock of $500,000, by George W. Ley, Max L. Gordan and Abe Raffee, Los Angeles, and Roy Atkinson, Santa Monica, Cal. The company plans to build and repair ships and engage in a general engineering business.

The Doullut & Williams Shipbuilding Co., New Orleans, is reported planning the erection of an extension to the machine shop, with new equipment, steel fabricating shop and other buildings for ship repair work. Two 10,000-ton floating drydocks will also be built. Horace Williams is secretary of the company.

Fire recently damaged the plant of the Alberta Motor Boat Co., Edmonton, Alta. The loss was estimated at $25,000. The plant will be rebuilt immediately and it is expected the company will be in the market for some equipment. J. W. Weir and J. Buchanan are interested.

A. S. McGregor, Georgetown, P. E. I., is interested in the construction of a marine railroad and a floating drydock there.

The Three Rivers Shipyard Co. and the National Shipbuilding Co., Three Rivers, Que., will start work shortly on the construction of blacksmith and machine shops, which were recently damaged by fire.

Business Changes

The New England Maritime Corp., Boston, has changed its name to the North Atlantic & Western Steamship Co., and is planning a monthly freight service between Boston and Pacific Coast ports.

The Black & Decker Mfg. Co., Baltimore, has removed its Philadelphia branch office from the West End Trust building to 318 N. Broad street, and its Cleveland office from 6523 Euclid avenue to 6225 Carnegie avenue. W. C. Allen is manager of the Philadelphia branch and G. A. Dodge, of the Cleveland office.

C. C. Galbraith & Son, Inc., New York, are now located in their new building at 117-118 West street.

R. D. White & Co., Inc., freight brokers and shipping agents, are now located in their new offices at 227 Fulton street, New York.

The Staten Island Shipbuilding Co. has moved its New York City office from No. 1 to No. 11 Broadway.

The International Compositions Co. and the Otello & Bitmo Corp. (formerly the William Cail Bitmo Co.) have moved their offices from 18 Broadway to 23-25 Park place, New York. The International company has been awarded a contract by the shipping board for approximately $700,000 worth of bottom paints.

H. McL. Harding, terminal engineer, has moved his offices from Concourse building, 52 Vanderbilt avenue, to 5730 Grand Central Terminal, Forty-second street, New York.

New equipment will be required. L. Abbe is purchasing agent of the companies.

The building now being erected by the Ball Engine Co., Erie, Pa., manufacturer of steam engines, will be equipped as a machine shop. It will be one story, 135 x 200 feet, and will cost about $75,000.

The Collingwood Shipbuilding Co., Ltd., Collingwood, Ont., recently was inquiring for gears.

The Worthington Pump & Machinery Corp., New York, has arranged to manufacture, in addition to its hydraulic machinery, a line of water power machinery of all capacities for low, medium and high head service, including oil pressure system, water wheel governors and other auxiliaries.

The American Pipe & Bending Co., Colt street, Irvington, N. J., is having plans prepared for the erection of the first unit of its new plant. It will be 60 x 120 feet and will be built at an estimated cost of $15,000.

The plant of the Riverside & Essington shipyard, Philadelphia, recently was damaged by fire.

Plans are being prepared for the erection of a machine shop for the Union Ship Building Co., Baltimore. The building will be one story, 100 x 300 feet, and will be built at an estimated cost of $100,000.

A drydock and ship repair plant at Gloucester City, N. J., will be constructed by the John Blaizley Iron Works, 514 South Delaware avenue, Philadelphia. The plant will comprise two drydocks, one 550 feet and the other 450 feet, with wet basin for six vessels, and a number of shop and construction buildings. The company has acquired a site extending from the Pusey & Jones shipyard to the Gloucester ferry. The project, it is estimated, will involve an expenditure of $5,000,000.

C. B. Hamblen & Co., Boston, recently was incorporated to build engines and boats with a capital stock of $50,000, by C. B. Hamblen, Christopher Opsahl and A. M. McShane.

The Lacy Marine Motor Co., Rochester, N. Y., some time ago filed notice of dissolution.

The Thomas Laughlin Co., 133 Fore street, Portland, Me., manufacturer of marine hardware, specialties, etc., has awarded a contract for the erection of a 5-story machine shop, 100 x 100 feet, to be built at an estimated cost of $75,000.

The Boat Repair Corp., Communipaw avenue, Jersey City, N. J., has had plans prepared for the erection of a 2-story shop addition, to be built at an estimated cost of $26,000.

The Perth Amboy Dry Dock Co., Broad street, Perth Amboy, N. J., has awarded a contract to Griffen & Thompson, 223 Jefferson street, for the erection of a machine shop.

The Law Metallic Packing Co., Inc., 82 Webster street, Newark, N. J., has leased a new plant which it is equipping with modern machinery. The company recently removed its offices from the Grand Central Palace, New York, to its present address, although it still retains space at the Grand Central Palace for a permanent exhibit. Officers of the company are: President, John H. Gullak; vice president, Egmont Mollenhauer, and secretary, George W. Stewart.

In order to provide for the purchase of additional machinery and equipment, the Clay Engine Mfg. Co., Cleveland, manufacturer of marine and stationary motors, recently increased its capital.

The International Marine Underwriters, Inc., 76 Montgomery street, Jersey City, N. J., recently was incorporated with a capital stock of $125,000.

The Kleppe Steamship Co., Inc., Wilmington, Del., recently was chartered in Delaware with a capital stock of $2,000,000, to operate steamship lines.

The Steamship Tonine Corp., Wilmington, Del., recently was incorporated with a capital stock of $1,000,000 to build, own and operate vessels of all kinds.

New Trade Catalogs

RELEASING GEAR—The boat release gear manufactured by the Steward Davit & Equipment Corp., New York, is described and illustrated in a new leaflet. This gear, it is pointed out, is guaranteed to meet the approval of all classification societies and governmental bureaus. A test made by the British board of trade is describing, reciting how a 30-foot boat with a load of 6.89 tons was hoisted to the lower bridge rail and lowered again jerkily; one end of the boat hoisted and then released; boat hoisted clear of water and then released; boat towed with both tackles hooked and then released; boat towed with one tackle hooked and then released.

PACKING.—In a recent pamphlet, the Law Metallic Packing Co., New York, describes its line of metallic packing which is adaptable particularly for marine and stationary engines, centrifugal pumps, turbine engines, expansion joints, tailshaft stuffing boxes, valve stems, etc. It is designed to withstand pressures up to 4000 pounds per square inch and temperatures up to 1500 degrees Fahr. The packing was invented by William H. Law who was associated for 25 years with a number of marine companies in the United Kingdom, and with various manufacturing companies in this country since 1879, up until his retirement five years ago. The packing consists of a series of metal rings. When the gland is slightly set up, the two working rings are forced gently against the rod, not by a wedging effect but by the surfaces of the working rings being expanded inwardly. These wedge rings do not touch the rod but through setting up of the gland are forced away. The packing has bearing on the rod only with one-quarter of the surface of its total length, reducing friction. The book contains a number of testimonial letters from users.